

Nerves of the upper limb

The **brachial plexus** is formed by joining the ventral branches of C5–Th1, from C4 – a weaker and variable link to C5. It extends from the exits from the cervical spine through the *fissura scalenorum* to the axilla, joining - 3 primary bundles - the **trunci plexus brachialis**.

truncus superior (fibers from C5 and C6)

truncus medius (fibers from C7)

truncus inferior (fibers from C8 and Th1)

They descend further caudally and laterally behind the clavicle. Each bundle splits into an anterior and posterior branch. They join each other again and form 3 secondary bundles - **fasciculi plexus brachialis** - placed under the m. pectoralis minor and surround the a. axillaris

According to the relation to a. axillaris it is divided into:

Fasciculus lateralis (C5–C7) – arises from the junction of the anterior branches of the superior truncus and the medius, laterally from the axillaris n. musculocutaneus, radix lateralis *nervi mediani* (lateral part of the n. medianus).

Fasciculus medialis (C8–Th1) – separate anterior branch from the *truncus inferior*, medial from the a. axillaris – radix medialis *nervi mediani* (median part of the n. medianus), n. ulnaris, n. cutaneus brachii medialis (weaker), n. cutaneus antebrachii medialis.

Fasciculus posterior s. dorsalis (C5–Th1) – located dorsally from a. axillaris – n. axillaris, n. radialis.

According to the relation to clavicle:

pars supraclavicularis

pars infraclavicularis

Branches of the brachial plexus

Pars supraclavicularis:

Nervus dorsalis scapulae (C5, C6) – goes to the medial edge of the scapula via the m. scalenus medius and posterior and via m. levator scapulae, innervates: mm. rhomboidei, m. levator scapulae.

Nervus thoracicus longus (C5, C6) – runs in the mid-axillary line, after the m. serratus anterior (innervates - paralysis is manifested by the impossibility of abducting the arm above the horizontal).

Nervus subclavius (C5, C6) – a weak nerve going under the clavicle, innervates: m. subclavius (20% stronger - junction with n. phrenicus).

Nervus suprascapularis (C4–C6) – goes to the upper edge of the scapula along the m. omohyoideus and enters the incisura scapulae (below ligamentum transversum scapulae) and to the fossa supra and infraspinatus, innervates: m. supraspinatus, m. infraspinatus, shoulder sheath joint.

Nervus pectoralis medialis a lateralis (C5–Th1) – they go under the clavicle between both pectoral muscles (they innervate them).

Nervus subscapularis (C5–C7) – several branches, diverge from the plexus brachialis, innervate: m. subscapularis and m. teres major.

Nervus thoracodorsalis (C6–C8) – runs along the inner surface of the m. latissimus dorsi to its lateral edge, innervates: m. latissimus dorsi.

Rami musculares – short branches – innervation: mm. scaleni, m. longus colli.

Pars infraclavicularis:

Nervus musculocutaneus (C5–C7) – separates in the axilla from the fasciculus lateralis, pierces the m. coracobrachialis (hence the old name of the muscle - musculus perforatus Gasser) and enters between m. biceps brachii and m. brachialis, innervates:

m. coracobrachialis, m. biceps brachii, m. brachialis – (motor flexors of the arm), continues on the forearm - n. cutaneus antebrachii lateralis (sensitive) – descends between

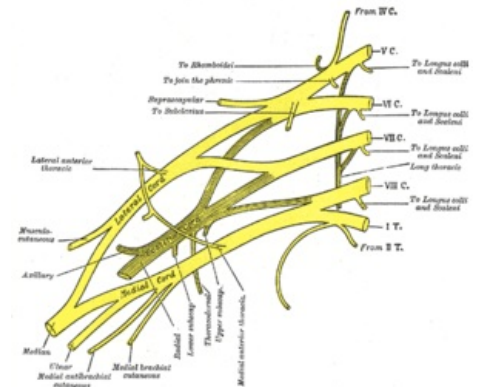
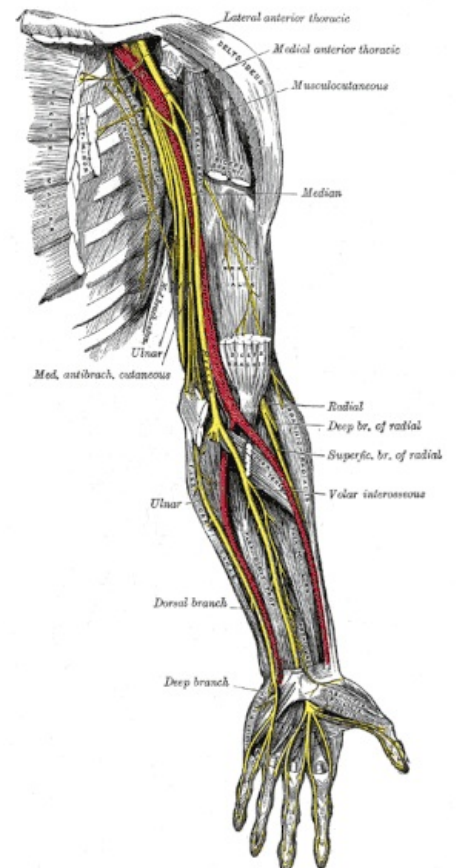


Diagram of the brachial plexus



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m. biceps and *m. brachialis*, pierces the fascia, joins the *vena cephalica antebrachii*, innervates: the skin of the lateral half forearm.

Nervus medianus (C5–Th1) – arises from the connection of *radix medialis* and *radix lateralis*.

Nervus ulnaris (C8–Th1) – from *fasciculus medialis*.

Nervus cutaneus brachii medialis (C8–Th1) – a weak nerve from the *fasciculus medialis*, pierces the *fascia axillaris* or even the *fascia brachii* and enters the subcutaneous tissue, the final branches for the skin of the medial half of the arm, behind the course of the *axilla* junction from the intercostal nerves (2, sometimes 3) – for the skin of the *axilla* – the *nervi intercostobrachiales*.

Nervus cutaneus antebrachii medialis (C8–Th1) – a weak nerve from the *fasciculus medialis*, initially accompanies the *vena brachialis*, passes through the *hiatus basilicus* into the subcutaneous tissue, terminal branches for the skin on the ulnar side of the forearm – *ramus anterior* (radial from the vein, innervates: the front side of the ulnar part of the forearm), *ramus ulnaris* (ulnar from the vein, turns to the dorsal side of the forearm).

Nervus axillaris (C5–C6) – innervates: *m. deltoideus* and *m. teres minor* shoulder joint, continues – ***nervus cutaneus brachii lateralis superior*** into the subcutaneous tissue between the *m. deltoideus* and *caput longum m. tricipitis brachii*, innervates: the skin in the region of the deltoid muscle and the skin of the lateral edge of the arm.

Nervus radialis (C5–C8, possibly Th1) – a strong nerve from the *fasciculus posterior*.

Links

References

- PETROVICKÝ, Pavel. *Anatomie s topografií a klinickými aplikacemi*. 1. edition. Martin : Osveta, 2002. 542 pp. vol. 3. ISBN 80-8063-048-8.