

MUNI

ARTERIAE

**úvod do cévního systému a přehled tepen
pro obor fyzioterapie**

Přednáškou provází: RNDr. Michaela Račanská, Ph.D.

Krevní cévy

Arteriae (terminales, collaterales)

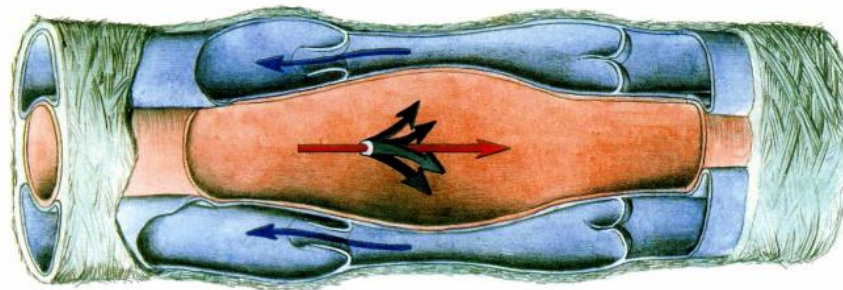
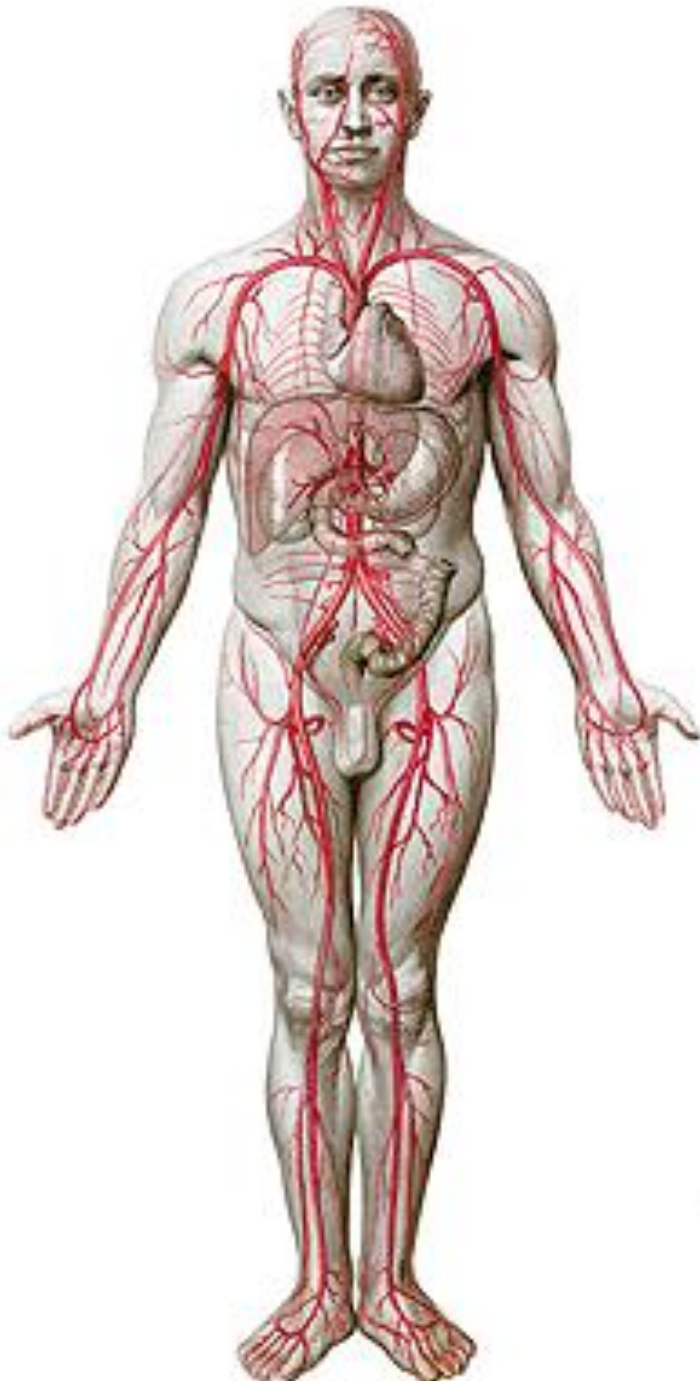
Arteriolae

Vasa capillaria (7-15 μm)

Venulae

Venae

Anastomoses

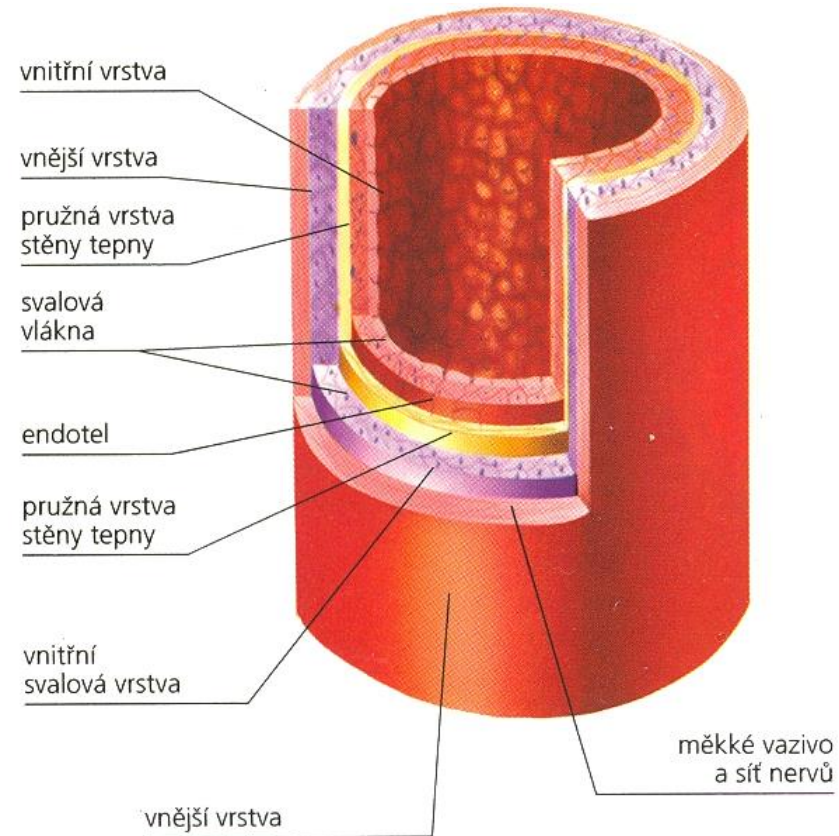


Arterie: stavba stěny

Tunica intima

Tunica media

Tunica externa

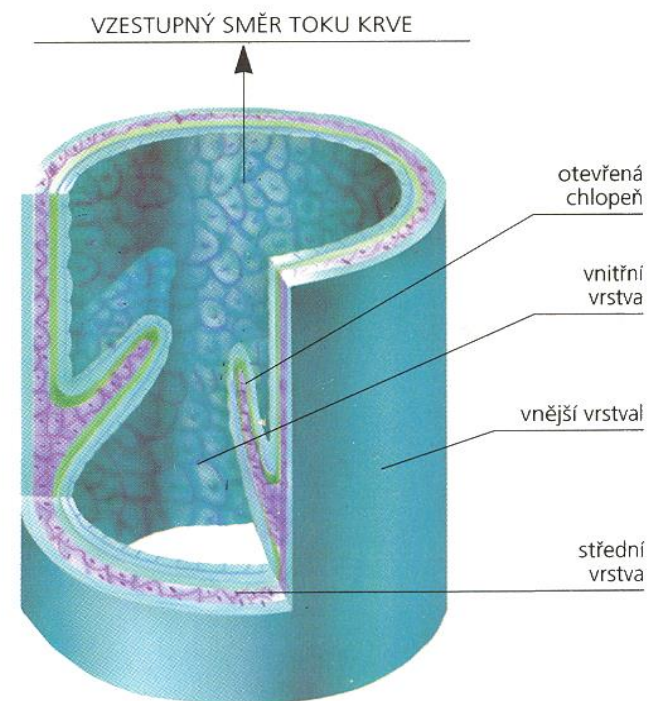


Žíly

Tunica intima

Tunica media

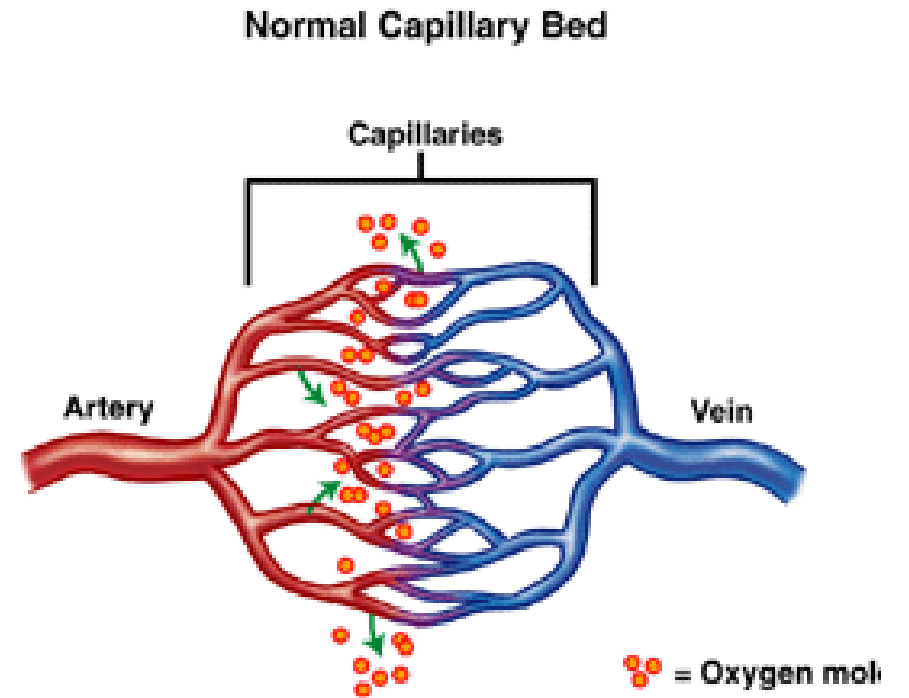
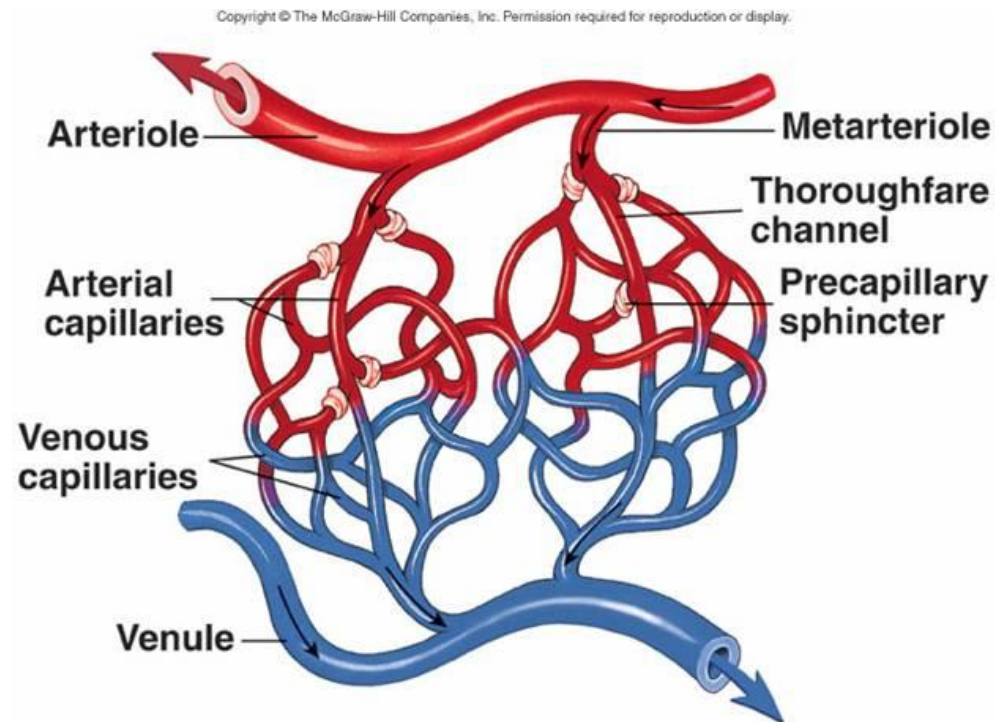
Tunica externa



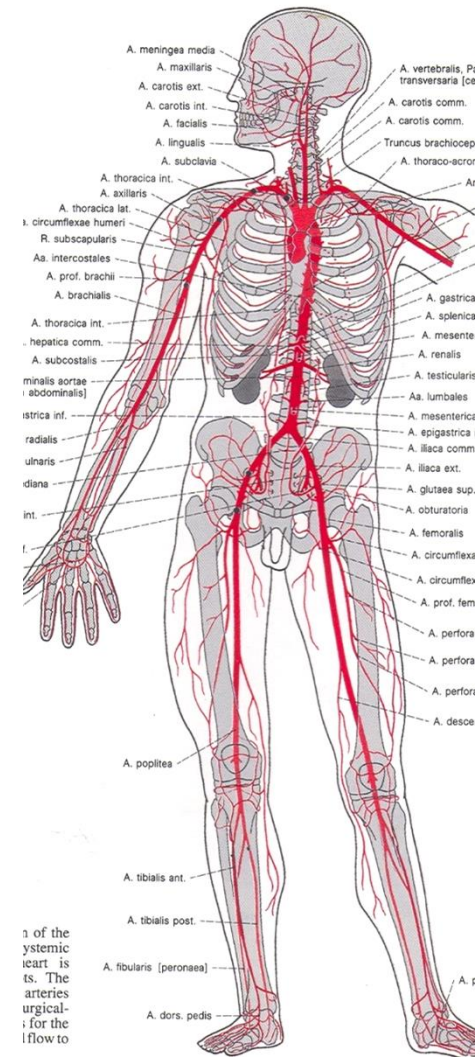
• chlopně

Vlásečnice (kapiláry)

– spojení mezi tepnami a žilami, výměna látek mezi krví a tkáněmi



Tepny

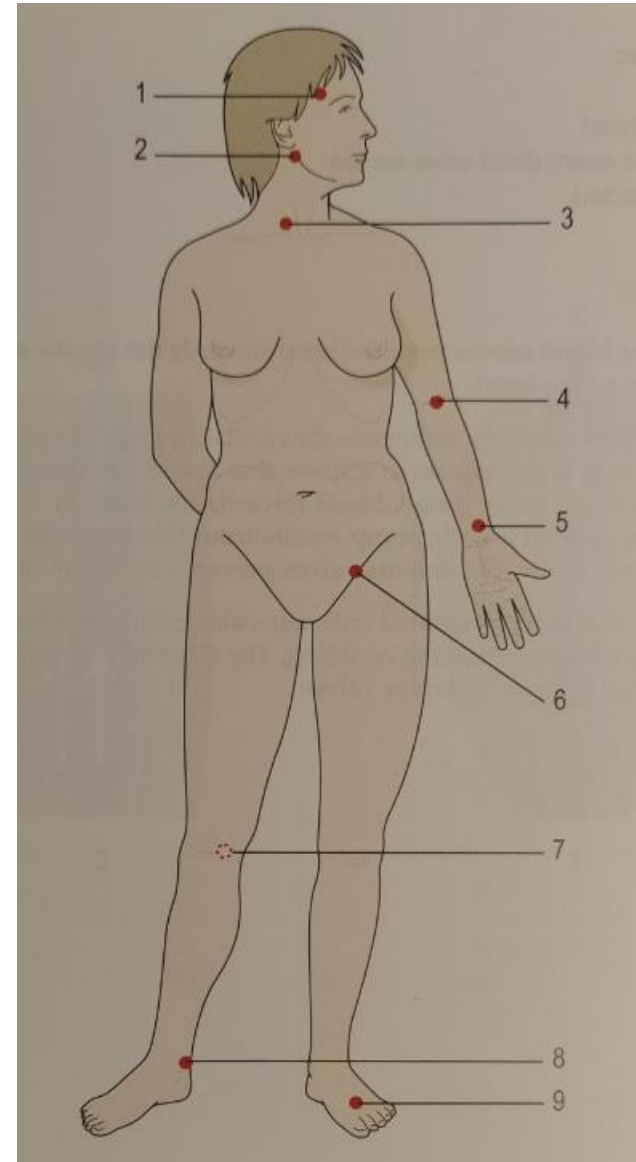


TEP

Při systole komor je v jeden okamžik celý systolický objem krve vstříknut do aorty, elastická stěna se rozšíří
rozšíření pokračuje jako tepová vlna do periferie.

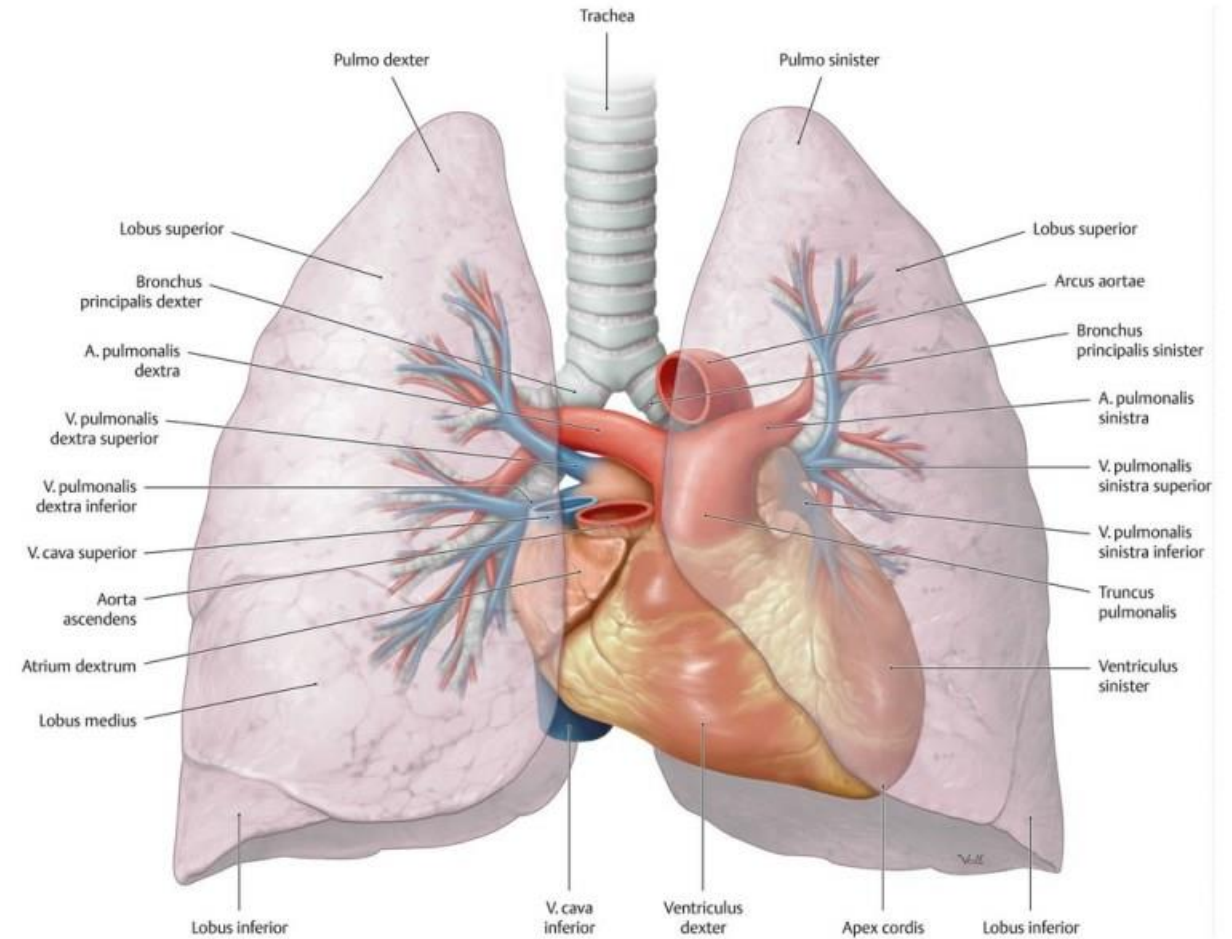
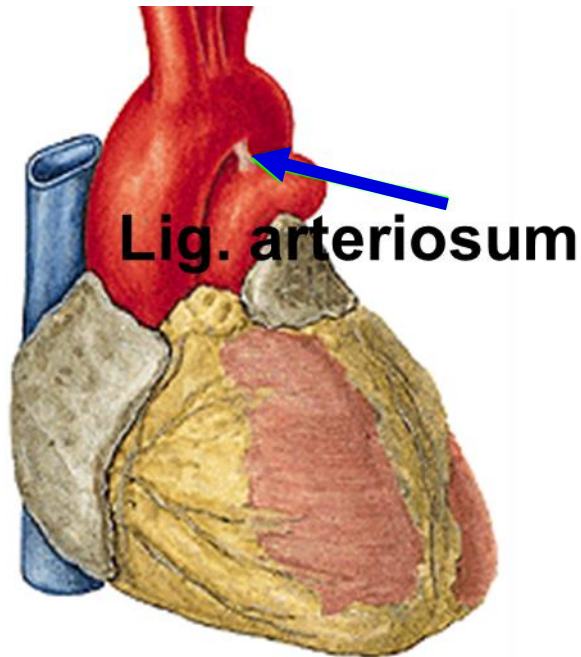
Měření tepu na periferních tepnách:

tlakové body (normální tepová frekvence **70/min.**)



Pulmonální systém -TRUNCUS PULMONALIS

- arteria pulmonalis dx. et sin.
- vv. pulmonales dextrae et sinistrae (sup. et inf.)
- lig. arteriosum (ductus arteriosus)



Aortální systém - Aorta

Aorta ascendens:

ventriculus sin. - 2. art. sternocostalis dx.
a. coronaria cordis dx. a sin.

Arcus aortae:

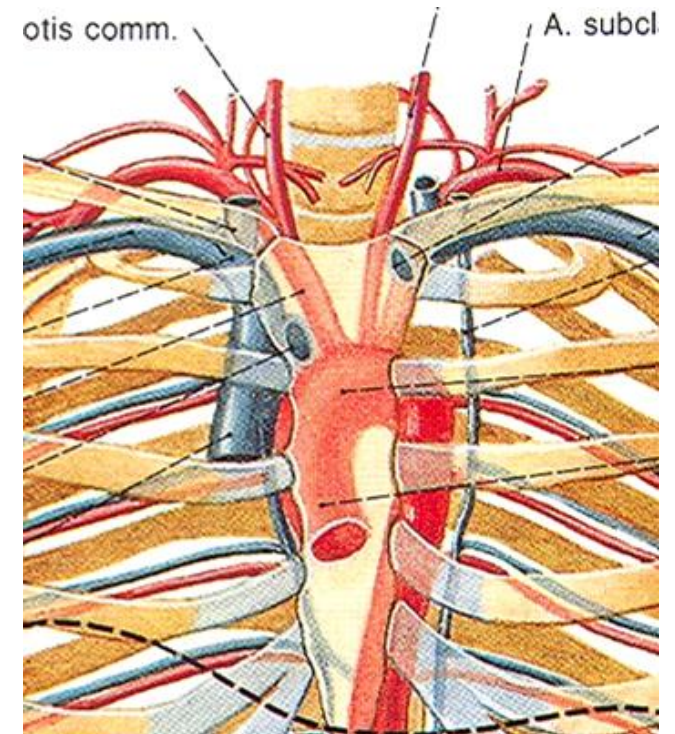
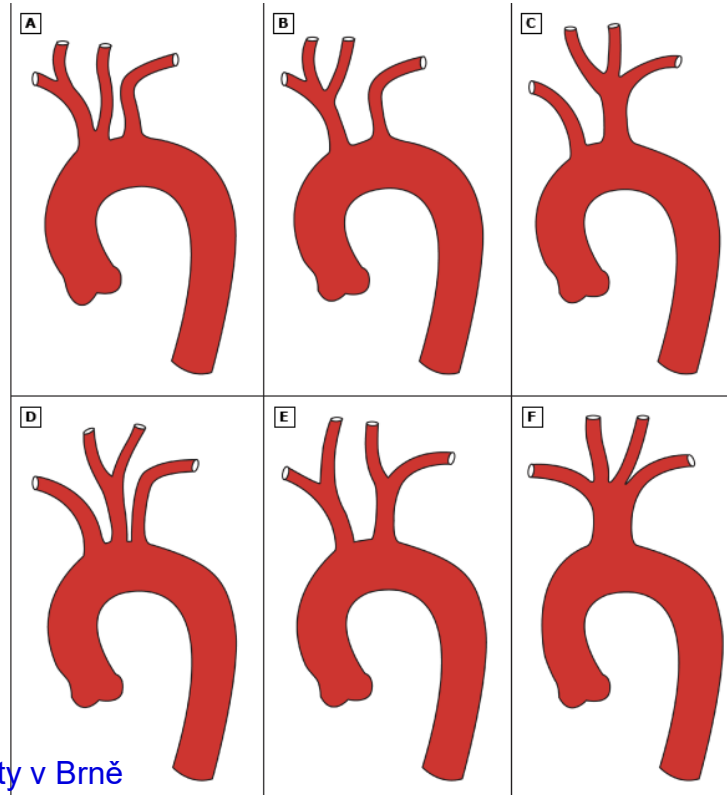
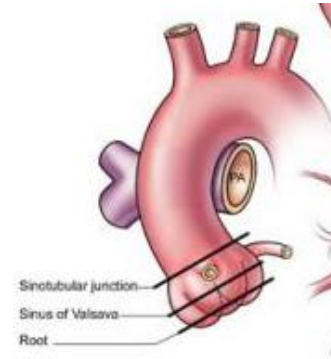
2. art. sternocostalis dx. - levou stranu Th₃
- truncus brachiocephalicus
(a. carotis communis dx. a a. subclavia dx.)
 - a. carotis communis sin.
 - a. subclavia sin.

Aorta descendens:

od Th₃ – L₄

Aorta thoracica

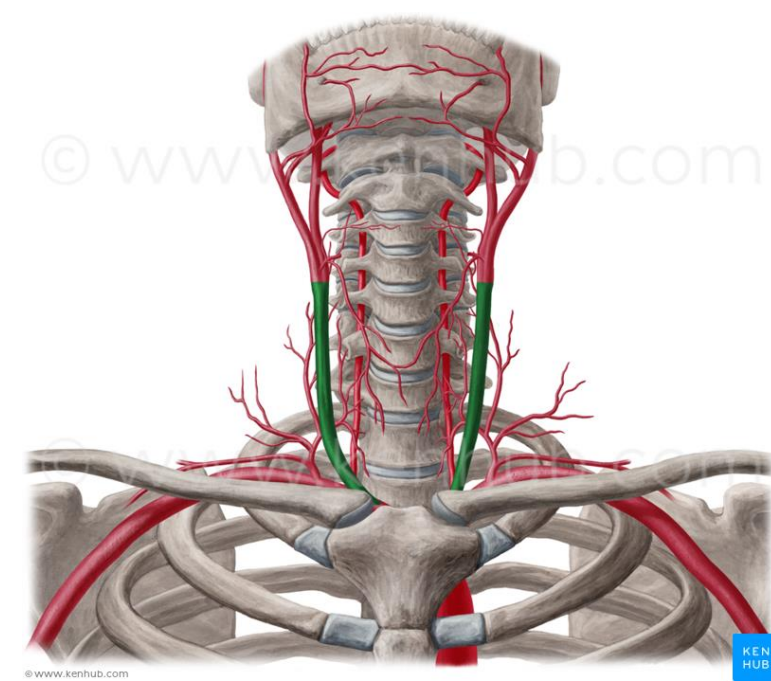
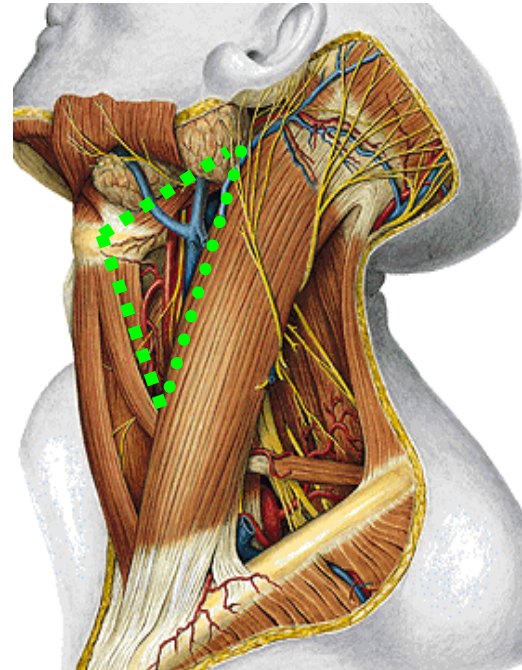
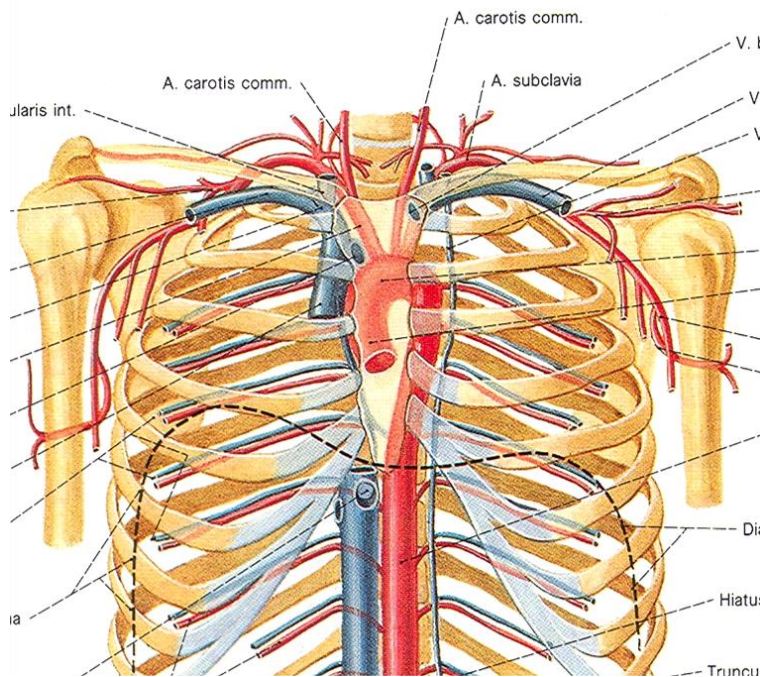
Aorta abdominalis (odděleny bránicí)



Tepenné zásobení hlavy a krku:

A. carotis communis: a. carotis interna a externa

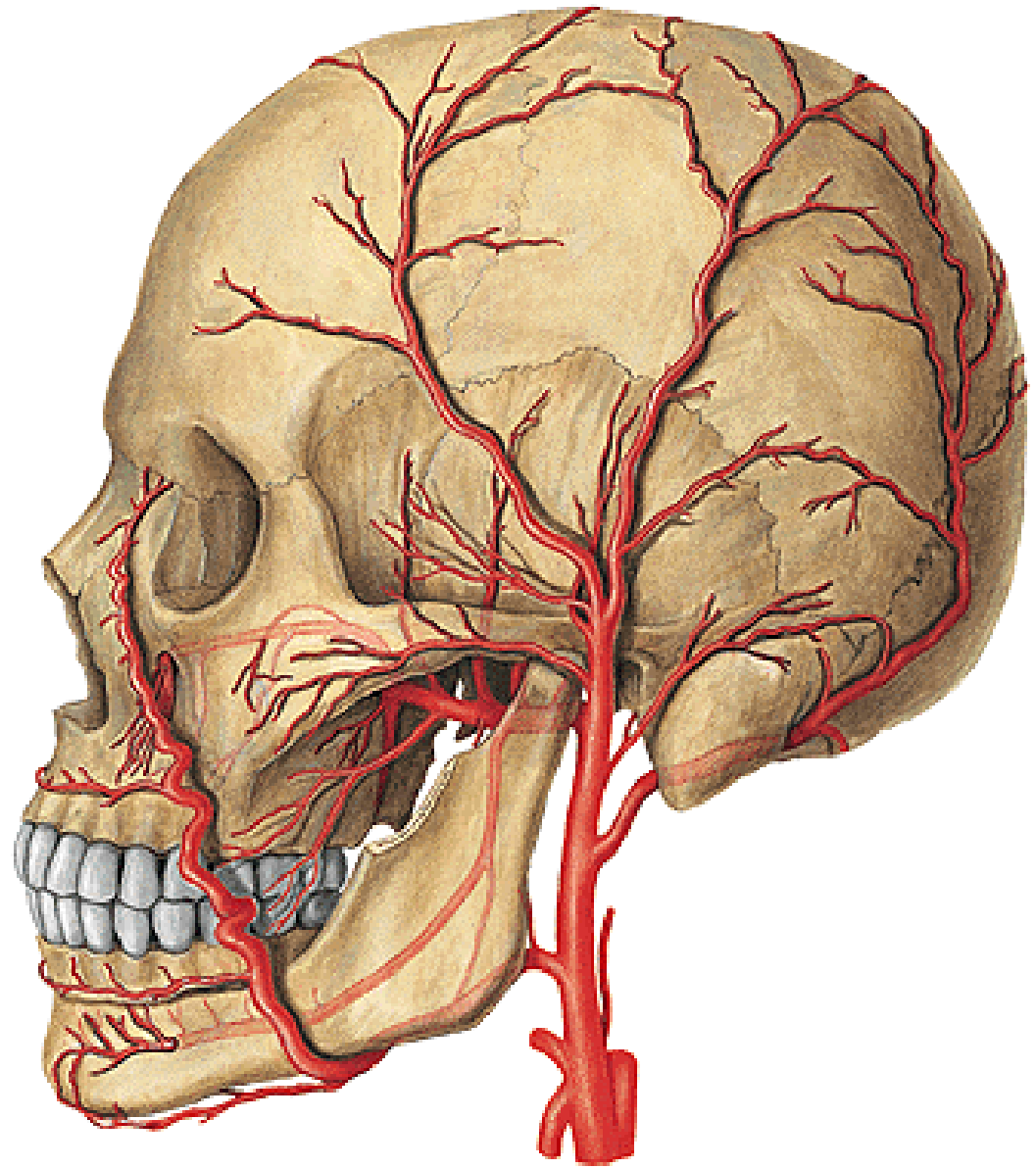
– (horní okraj štítné chrupavky)

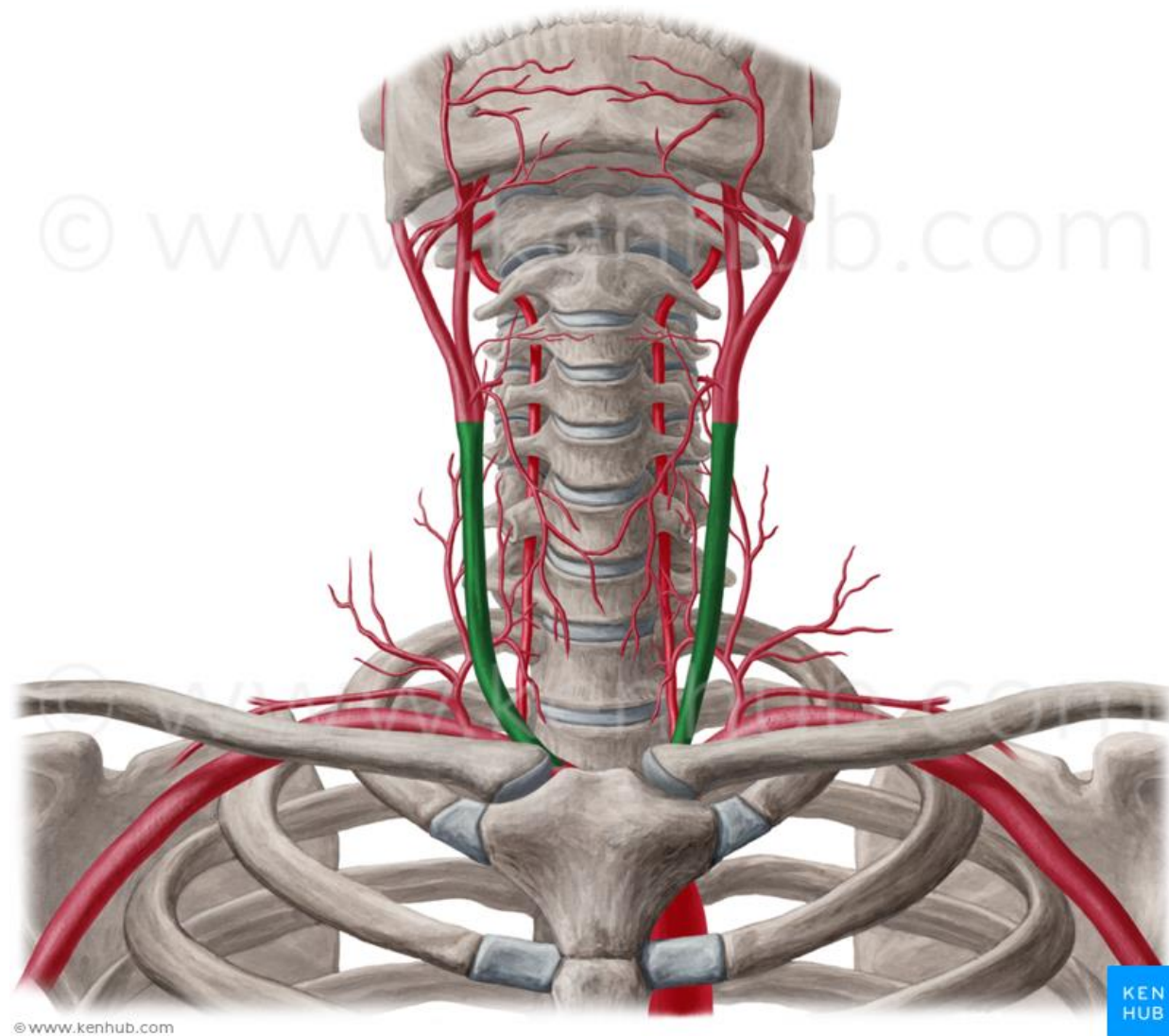


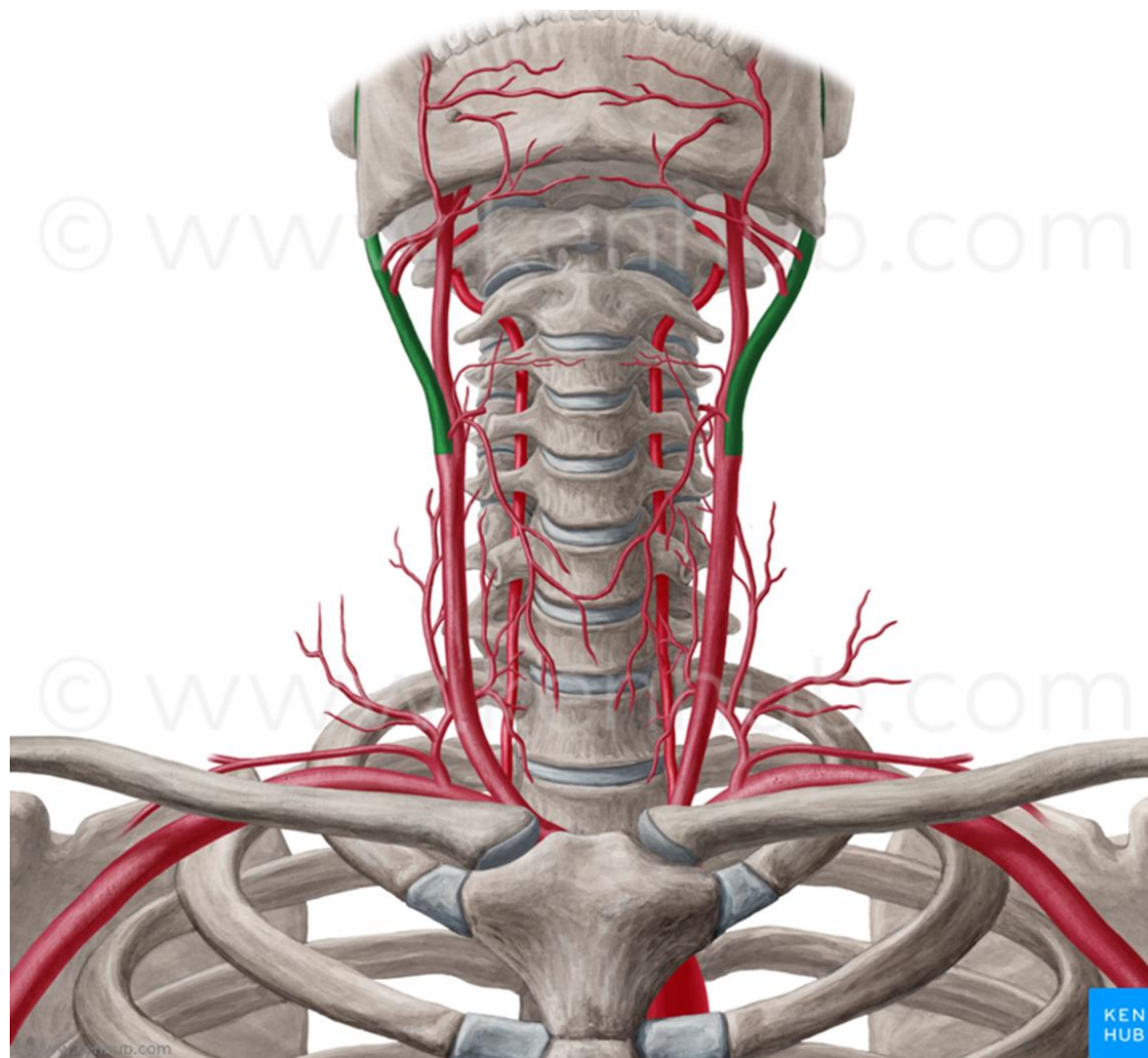
C₄
okraj štítné
chrupavky

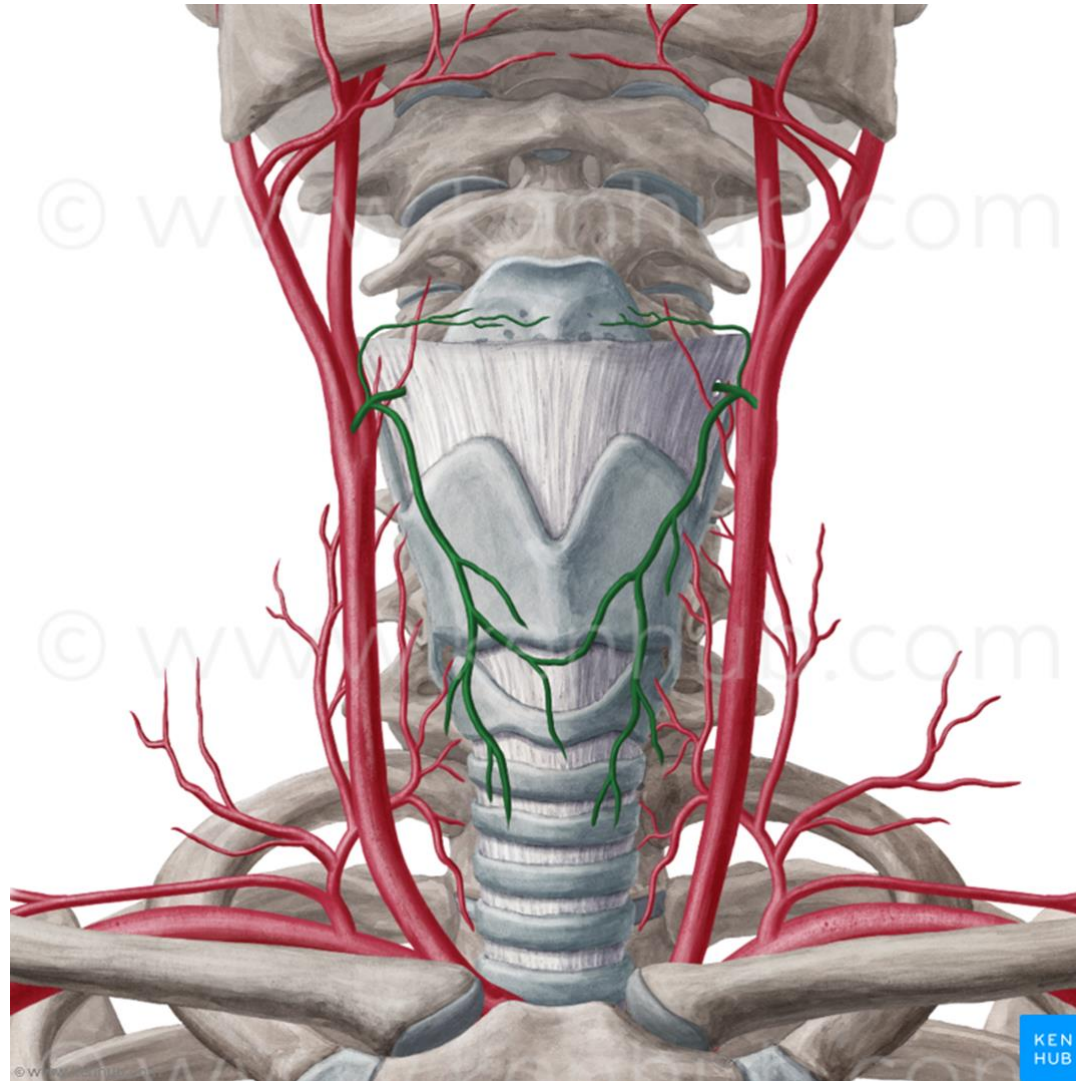
1) A. carotis externa

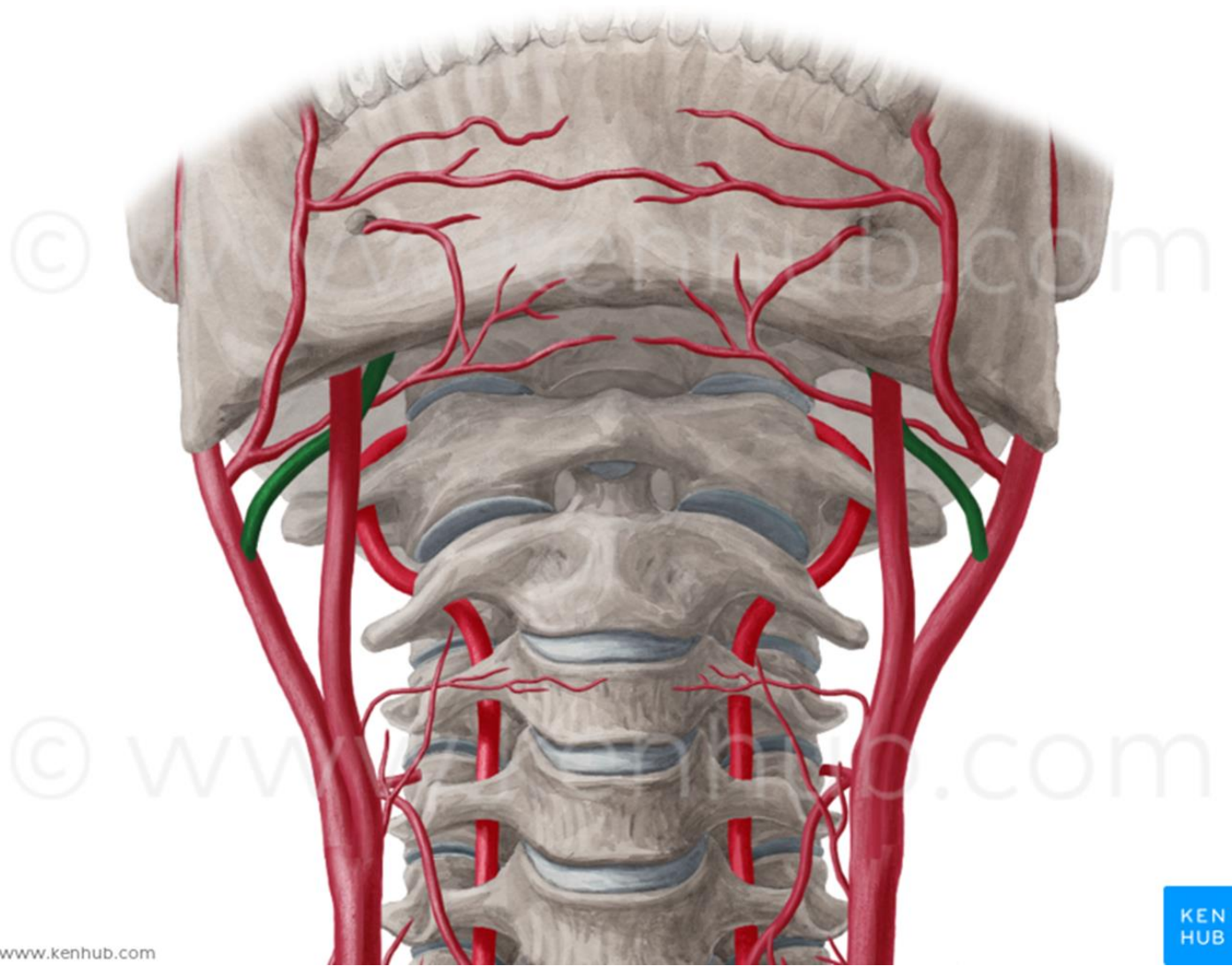
- **ventrální větve:**
 - a. thyroidea sup. ke štítné žláze
 - a. lingualis k jazyku
 - a. facialis obličejové krajiny (mimické svaly)
- **laterální větve:**
 - a. sternocleidomastoidea
- **dorzální větve:**
 - a. occipitalis
 - a. auricularis posterior
- **mediální větve:**
 - a. pharyngea ascendens
- **konečné větve:**
 - a. temporalis superficialis
 - a. maxillaris (žvýkací svaly)





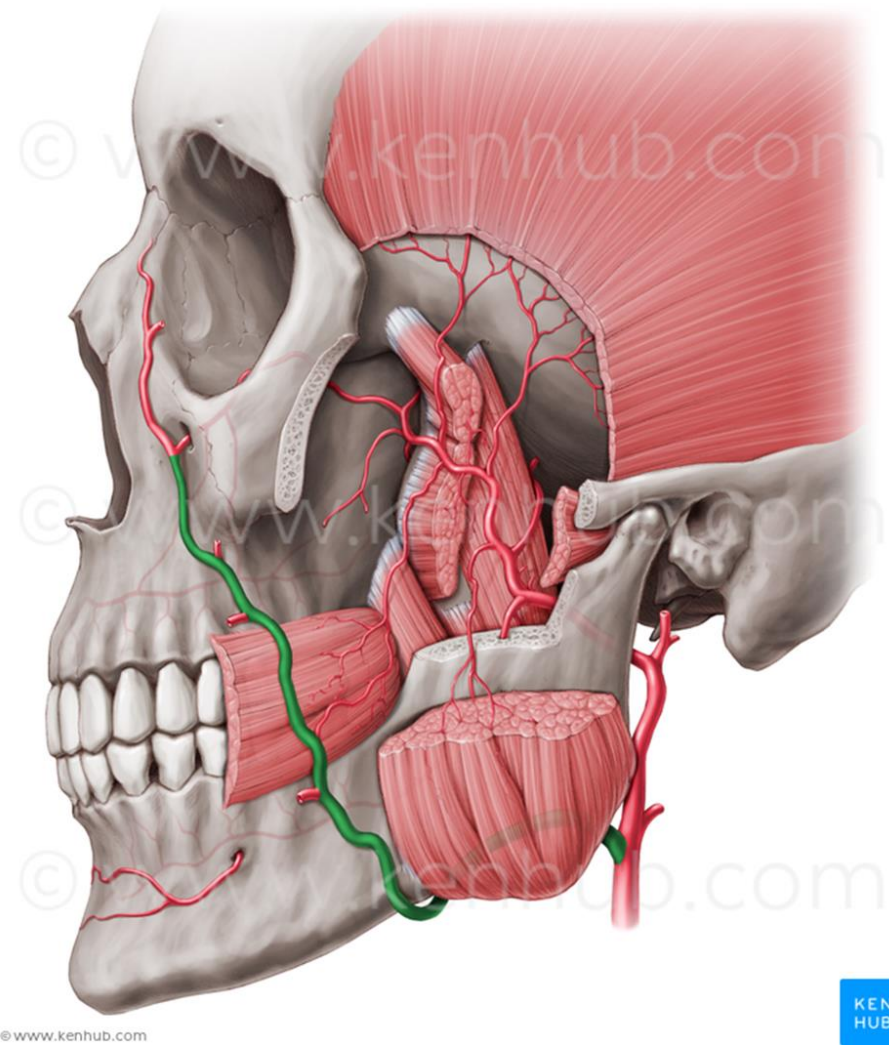


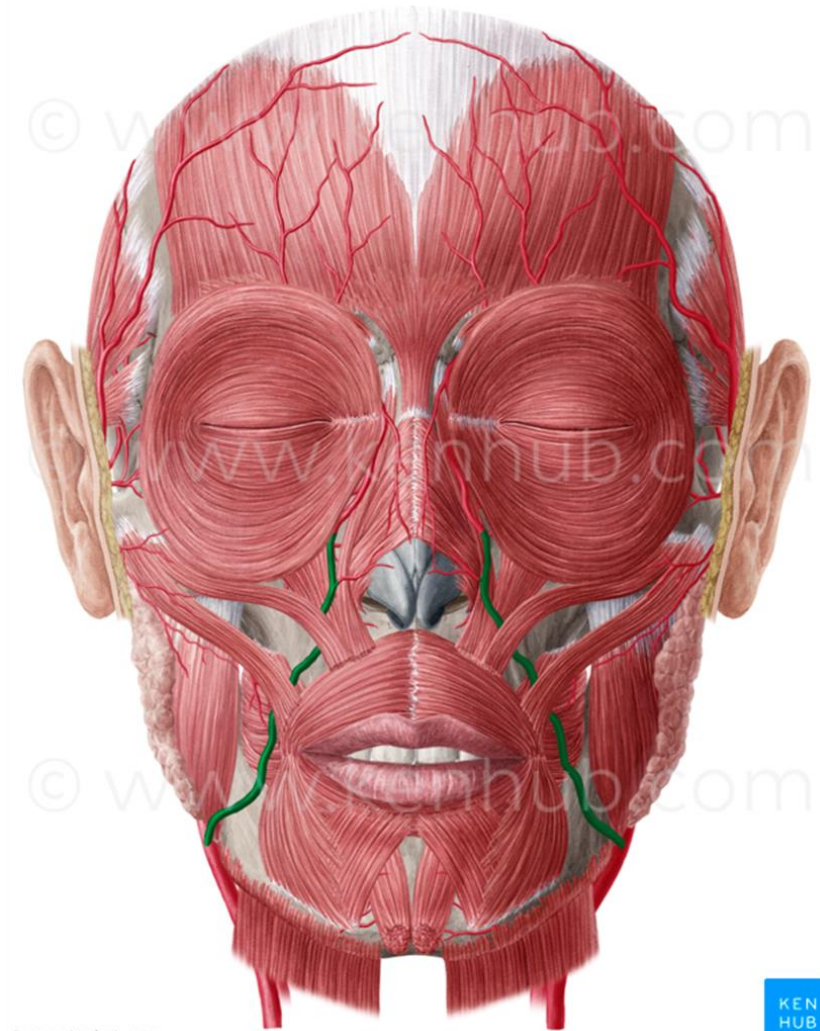


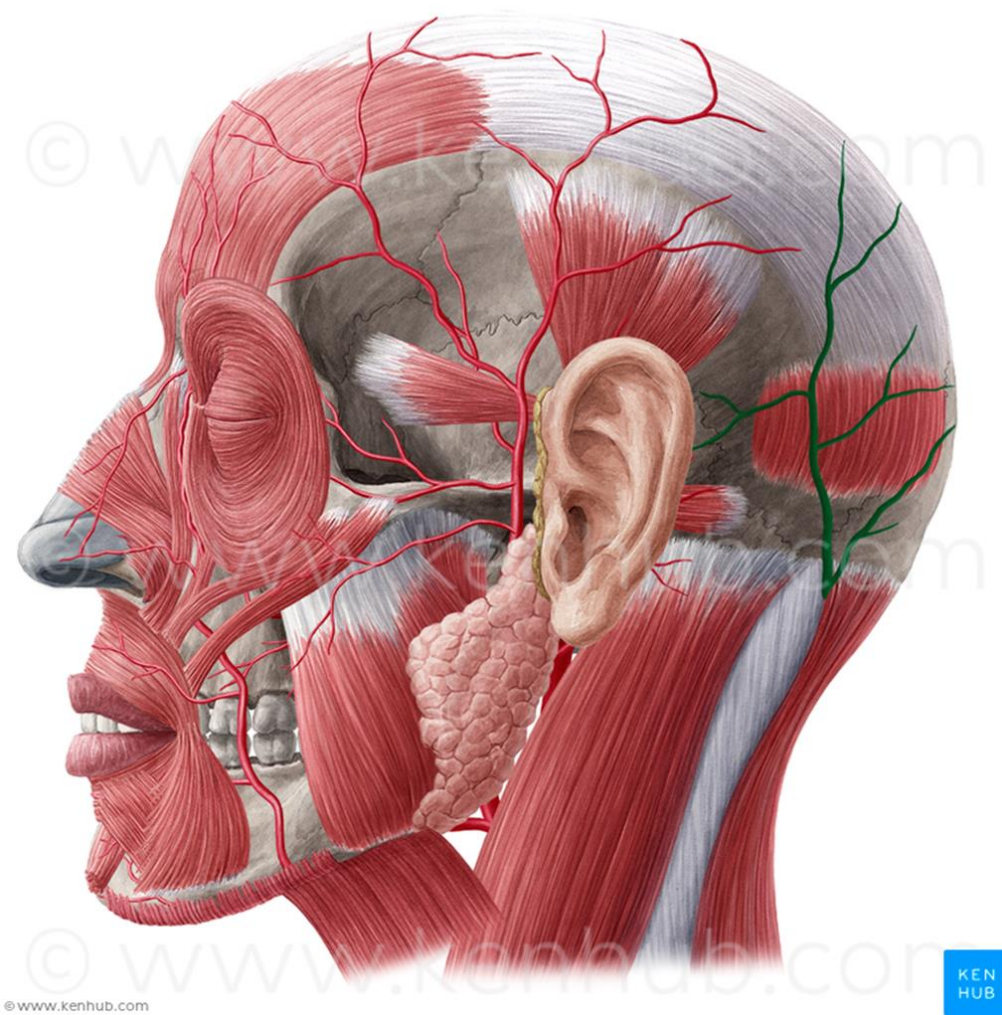


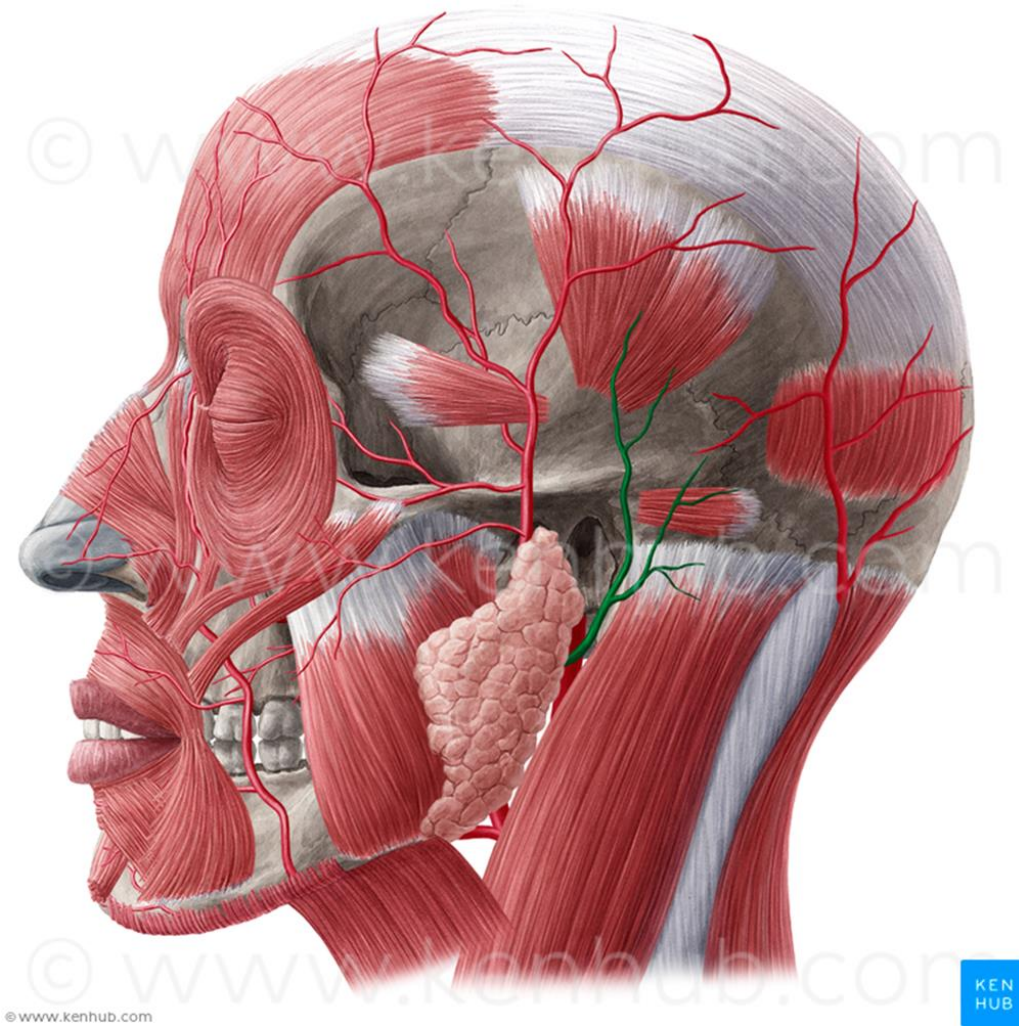
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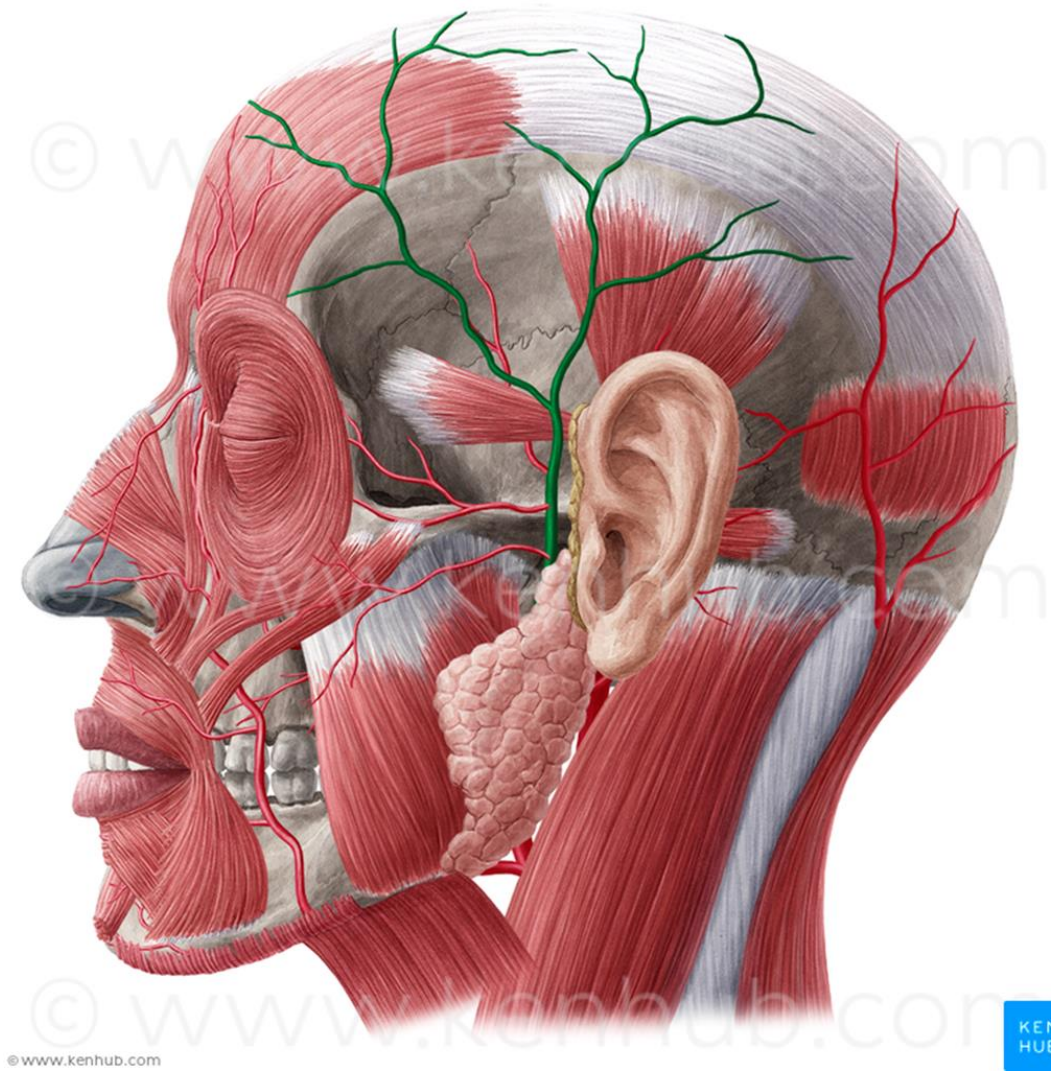


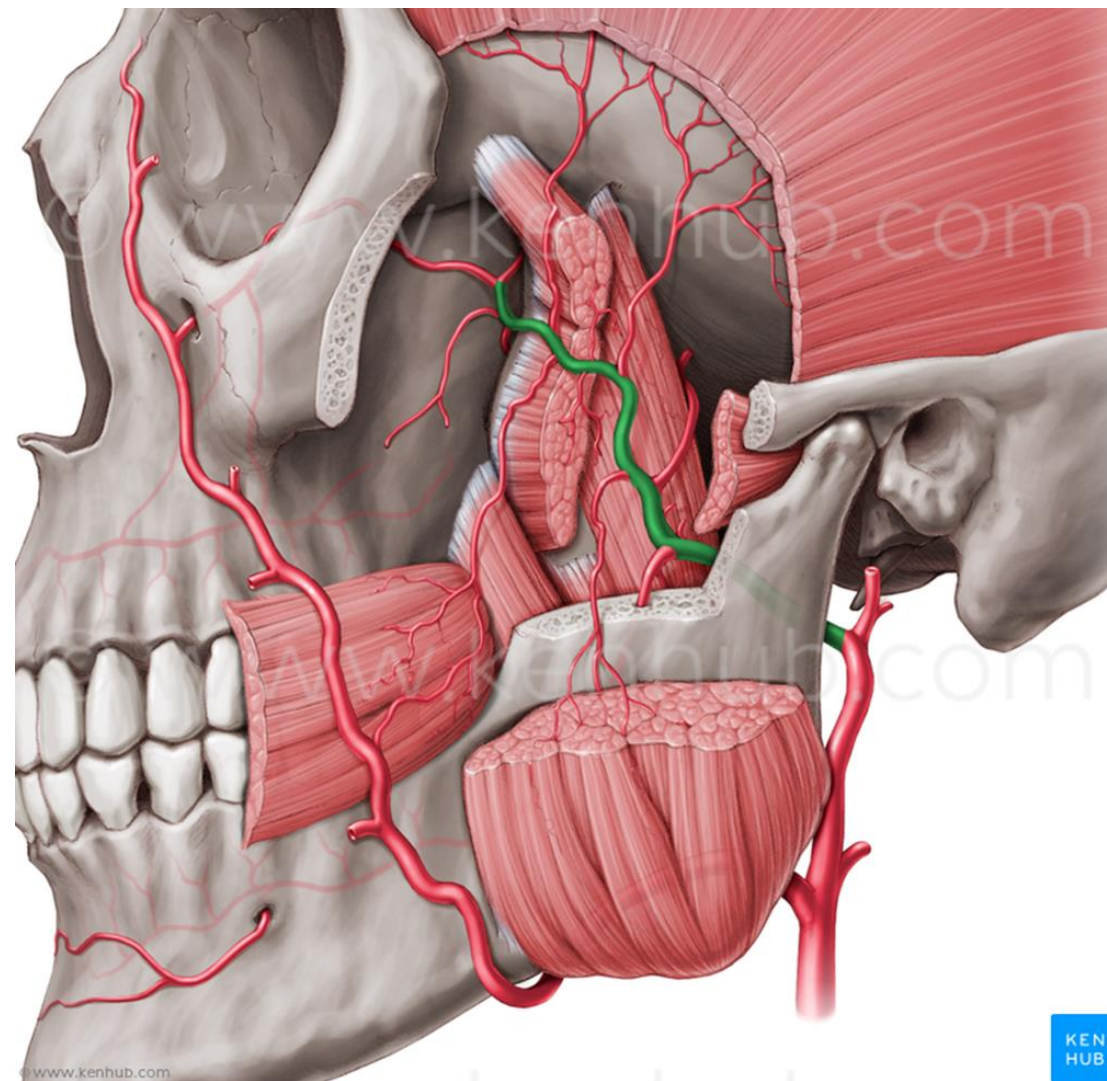


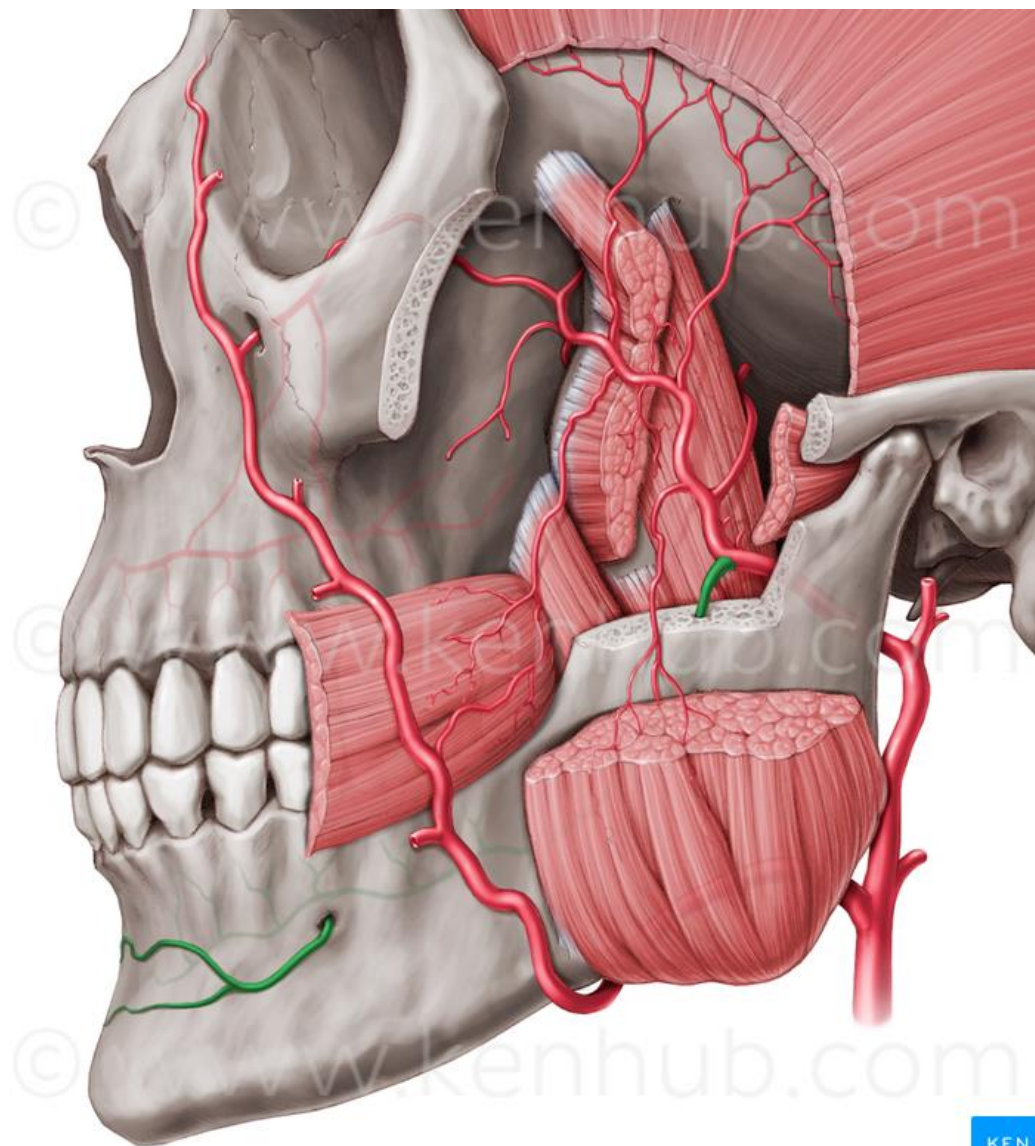
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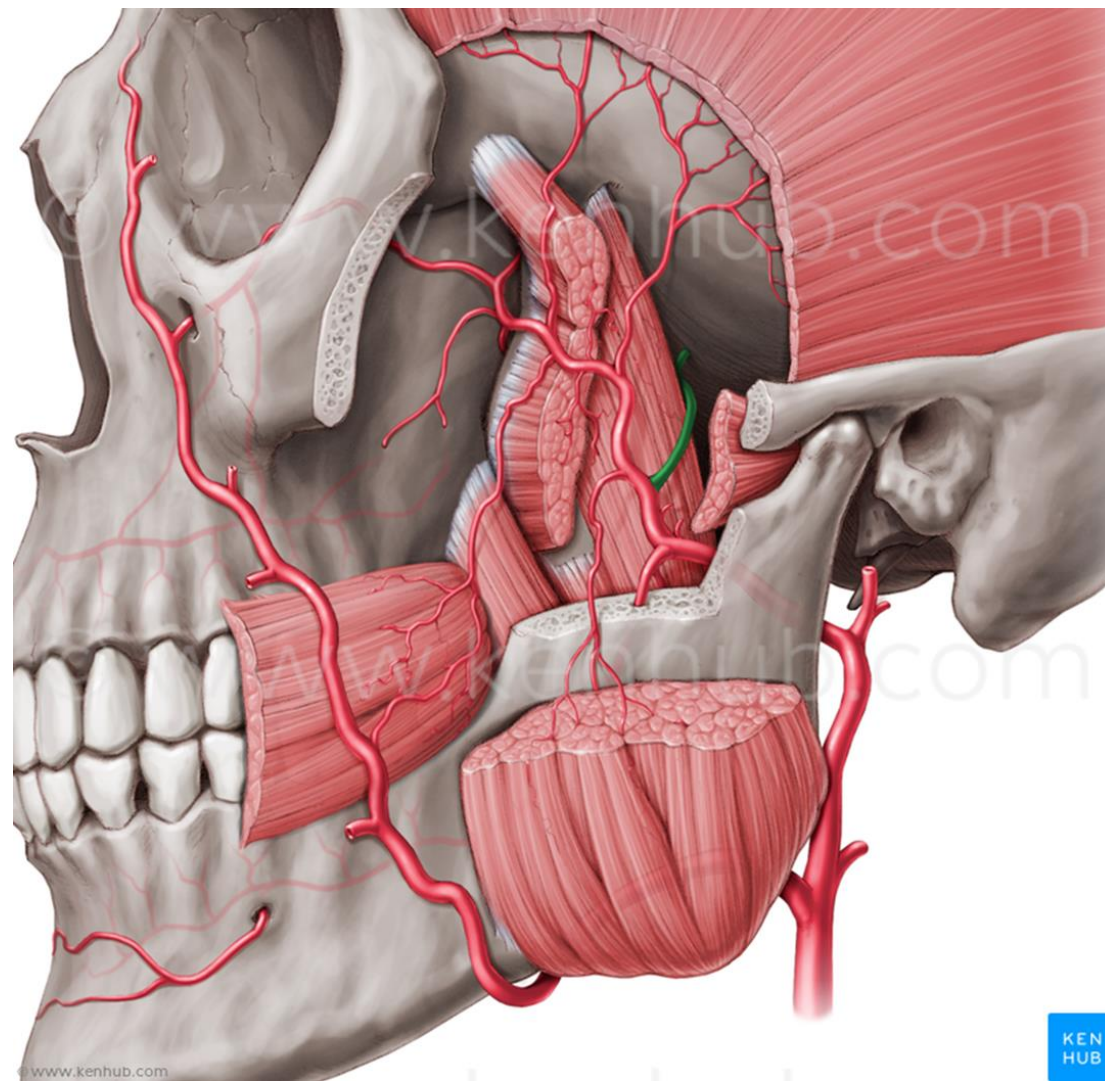


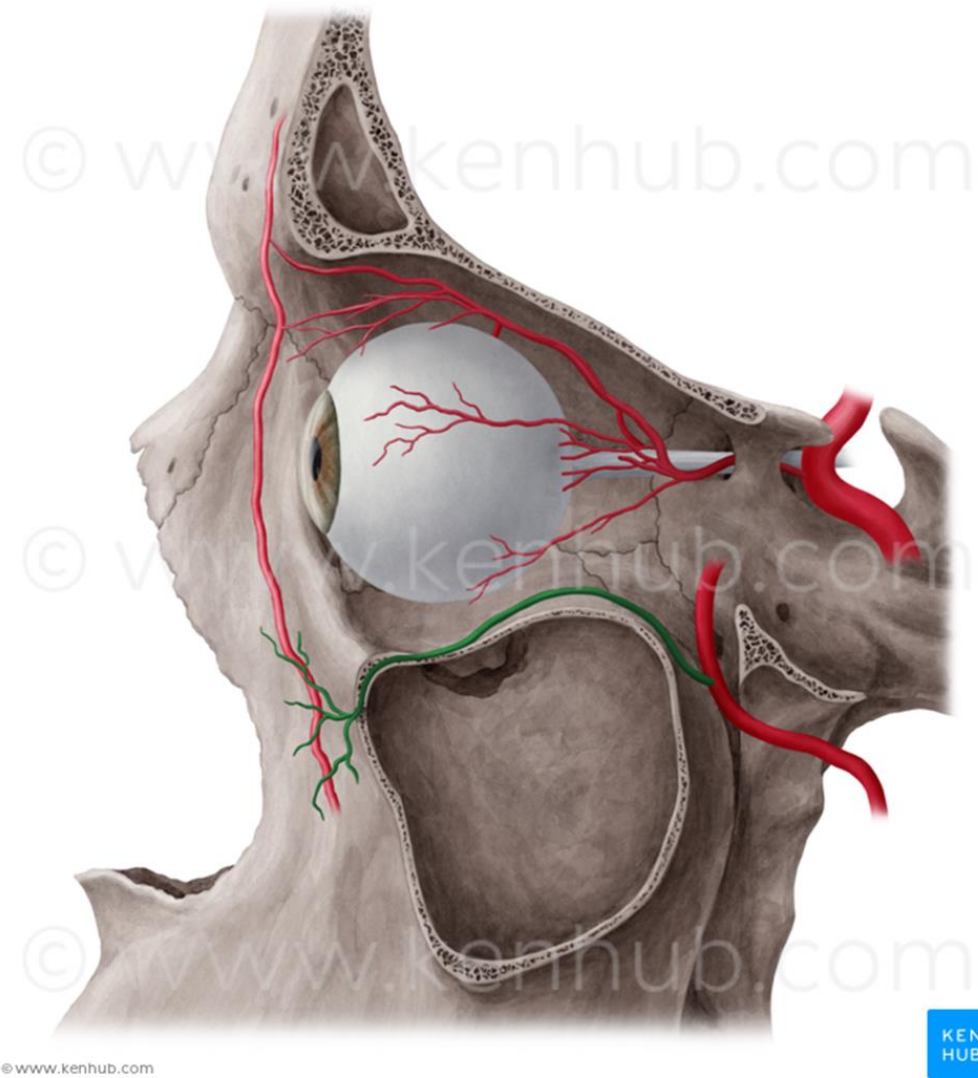
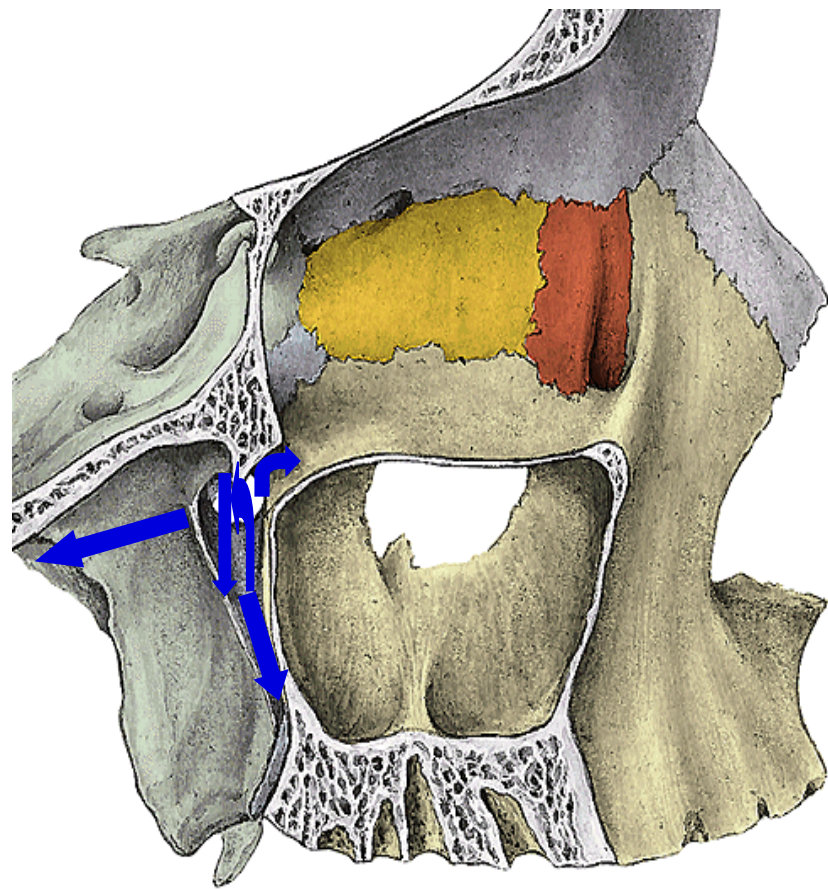




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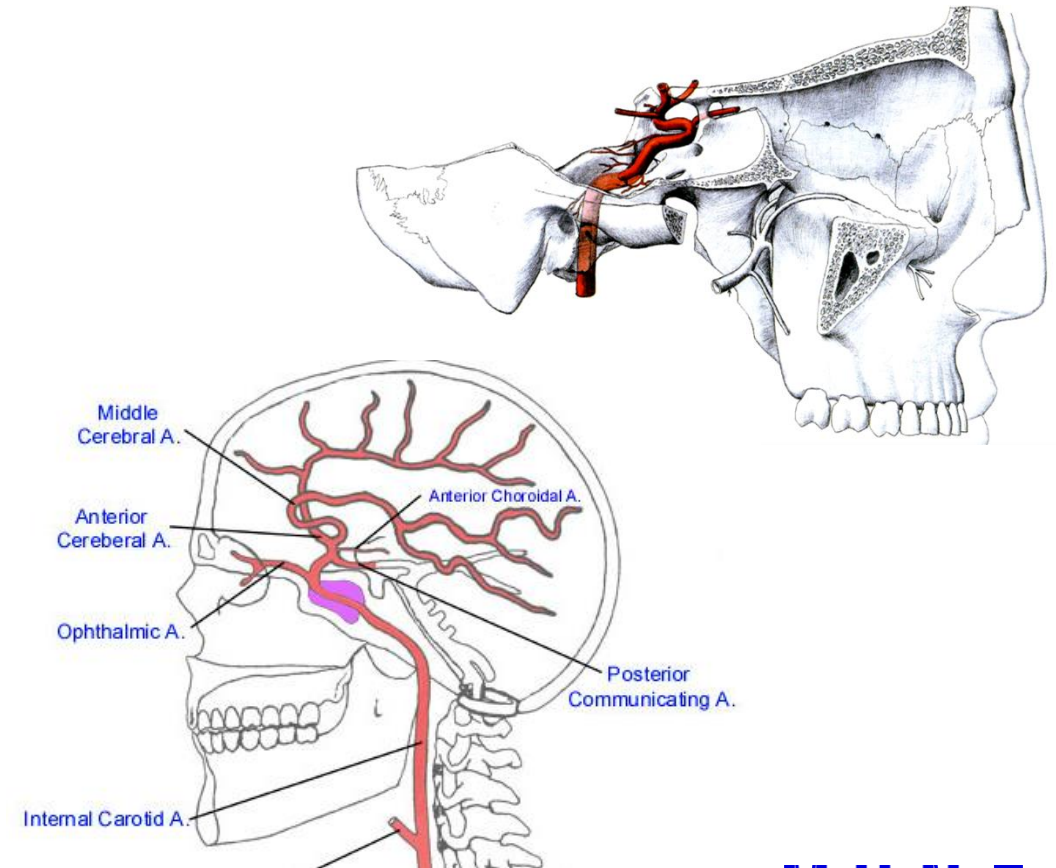
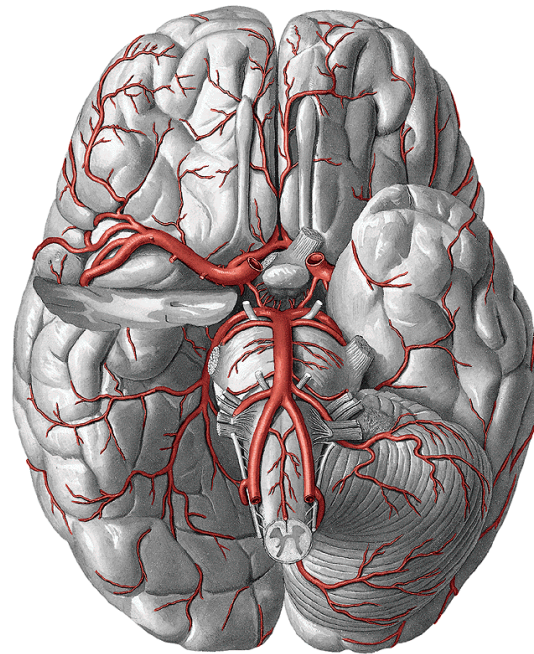
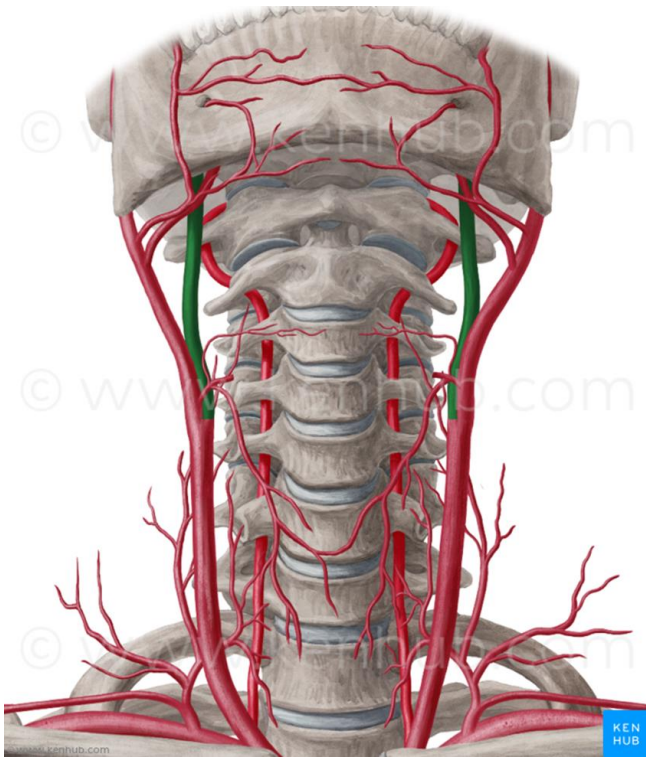






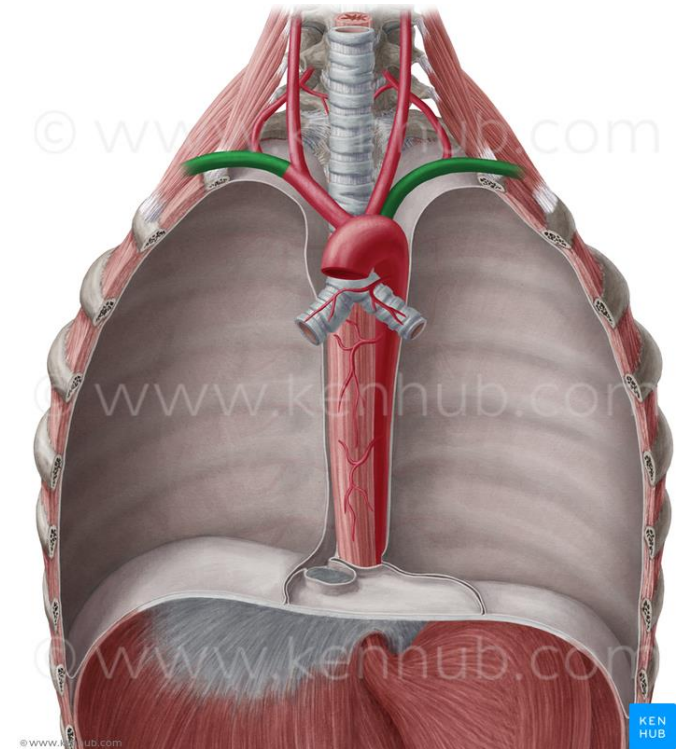
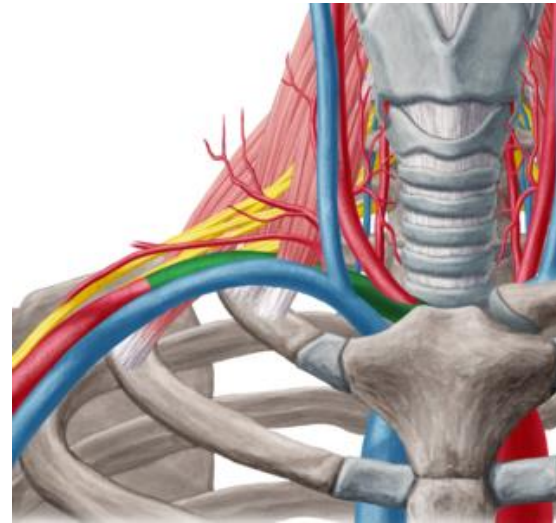
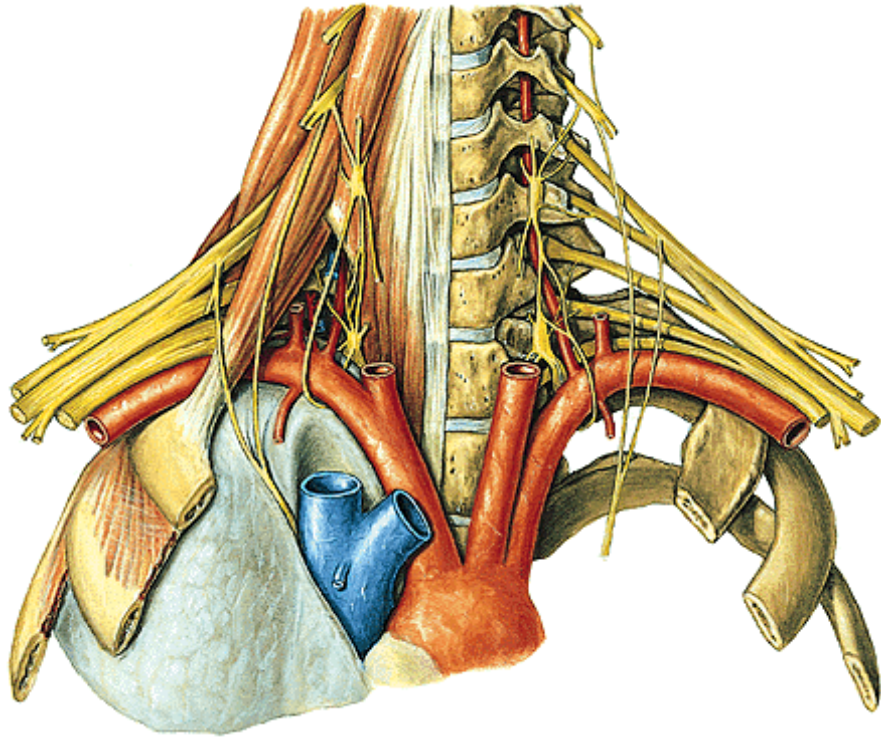
2) A. carotis interna

- přes apertura externa canalis carotici do střední jámy lební, zásobuje přední část hemisfér a očníci



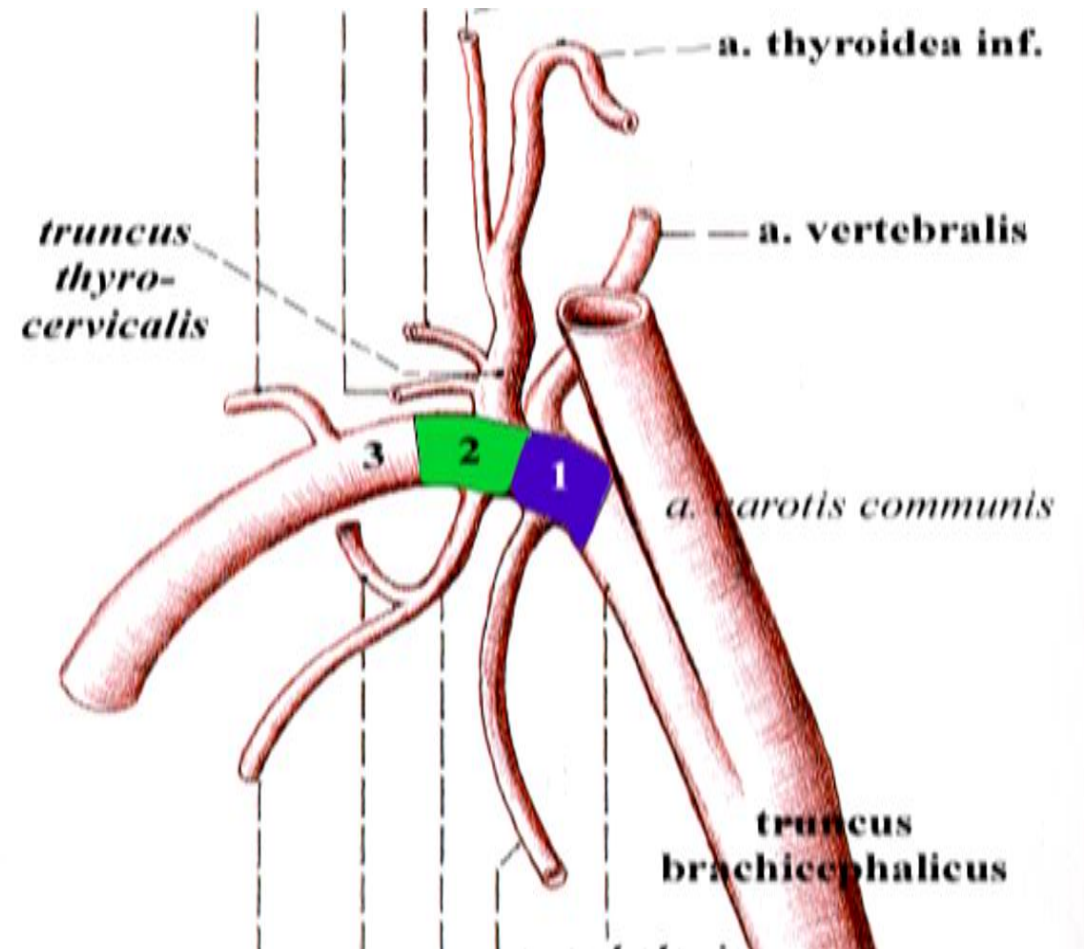
A. subclavia

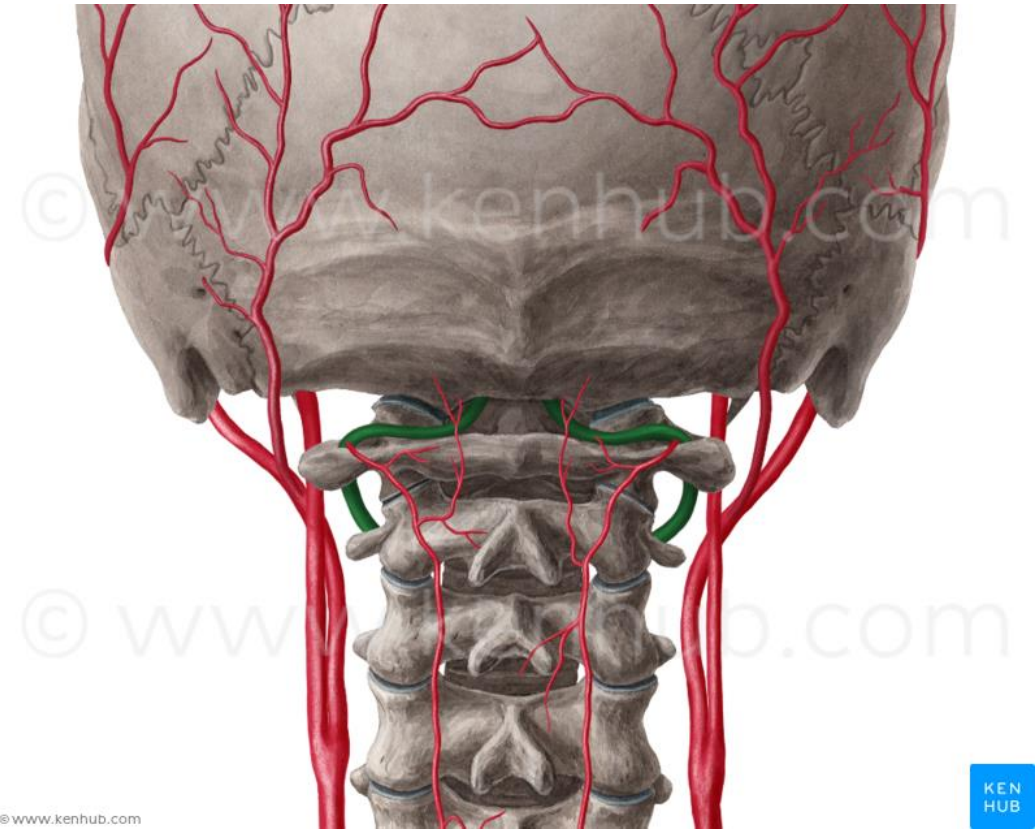
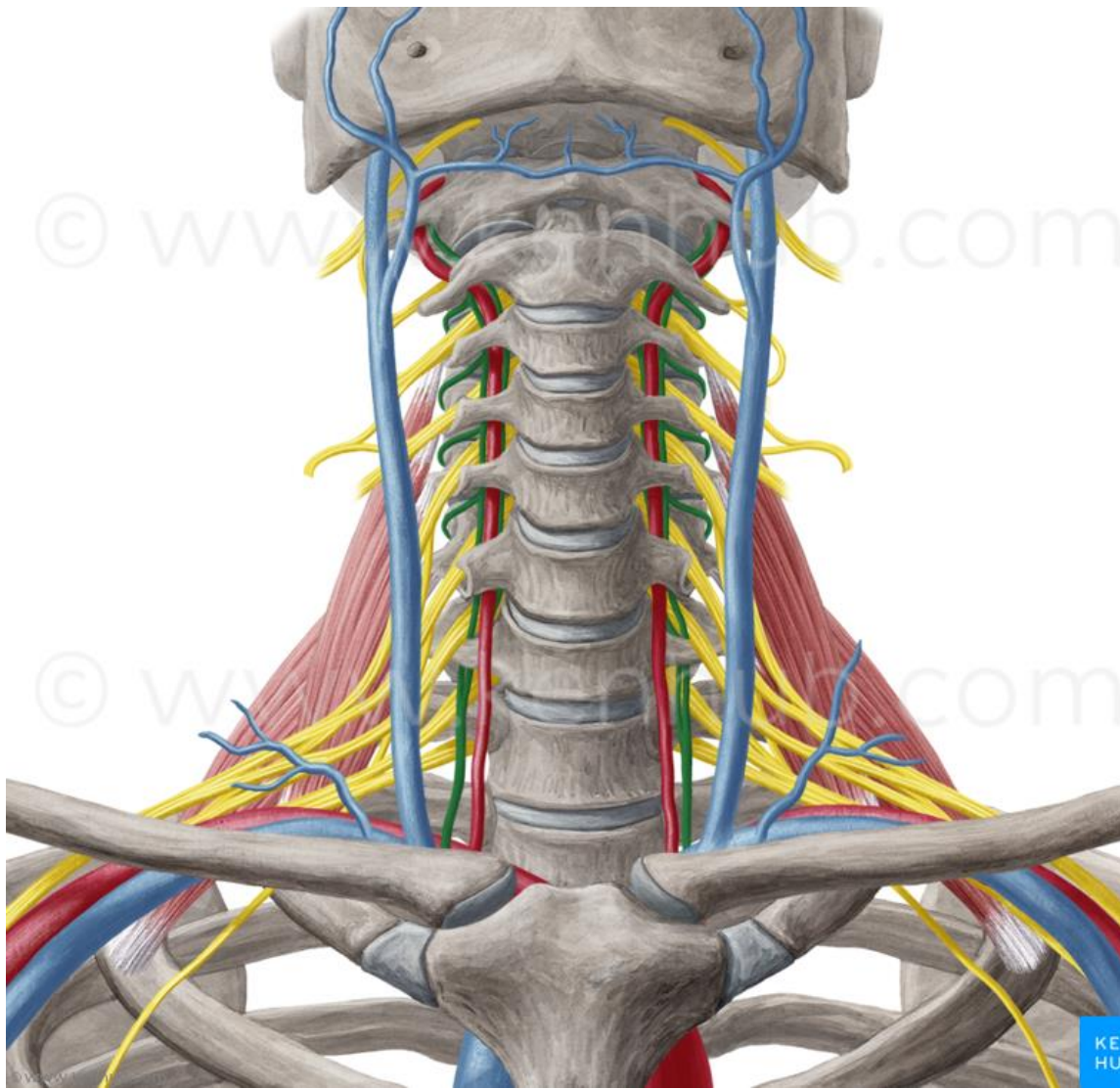
- prochází přes cupula pleurae, fissura scalenorum, vytváří sulcus a. subclaviae na 1. žebře – od zevního okraje 1. žebra mění jméno na a. axillaris

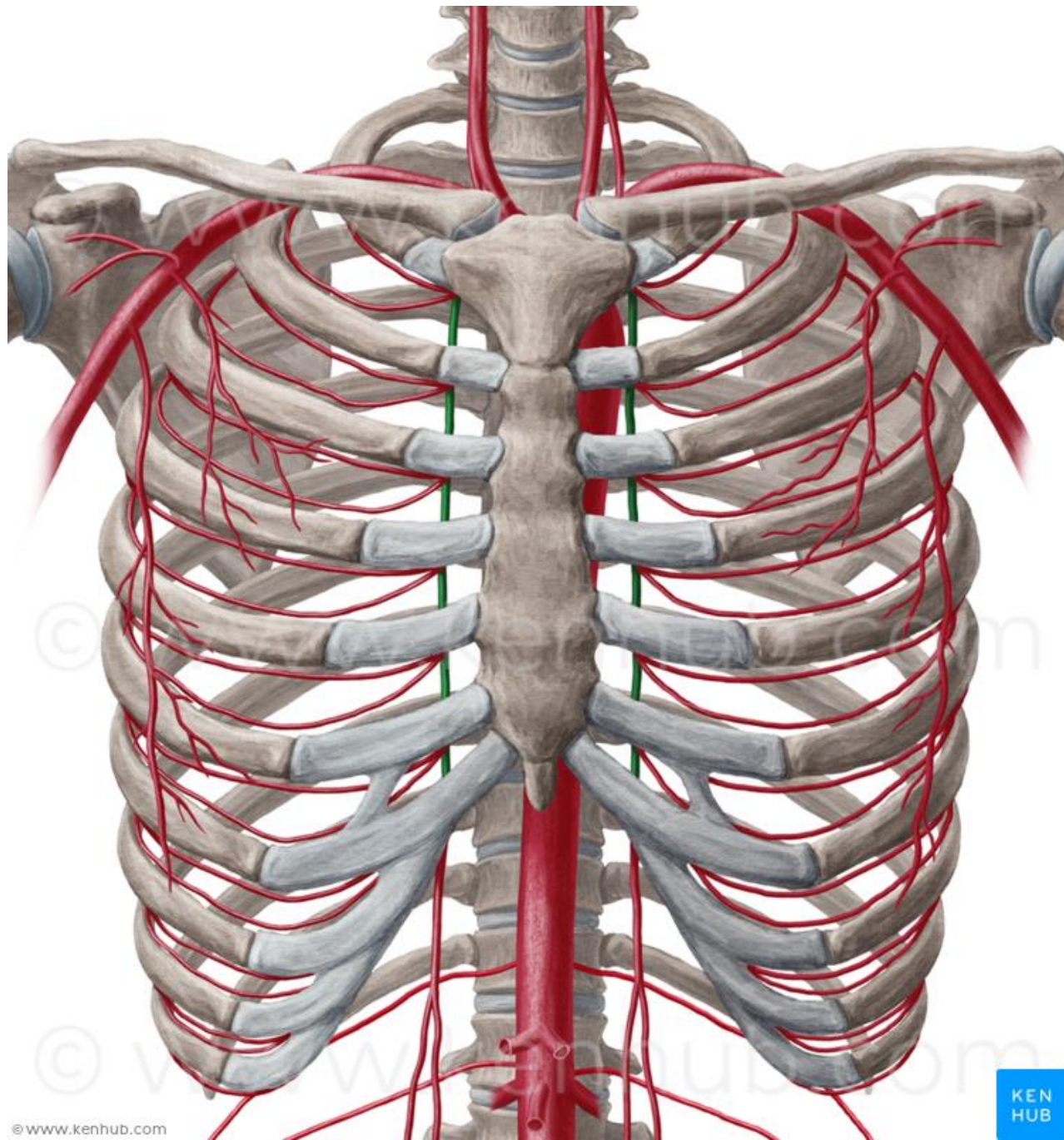


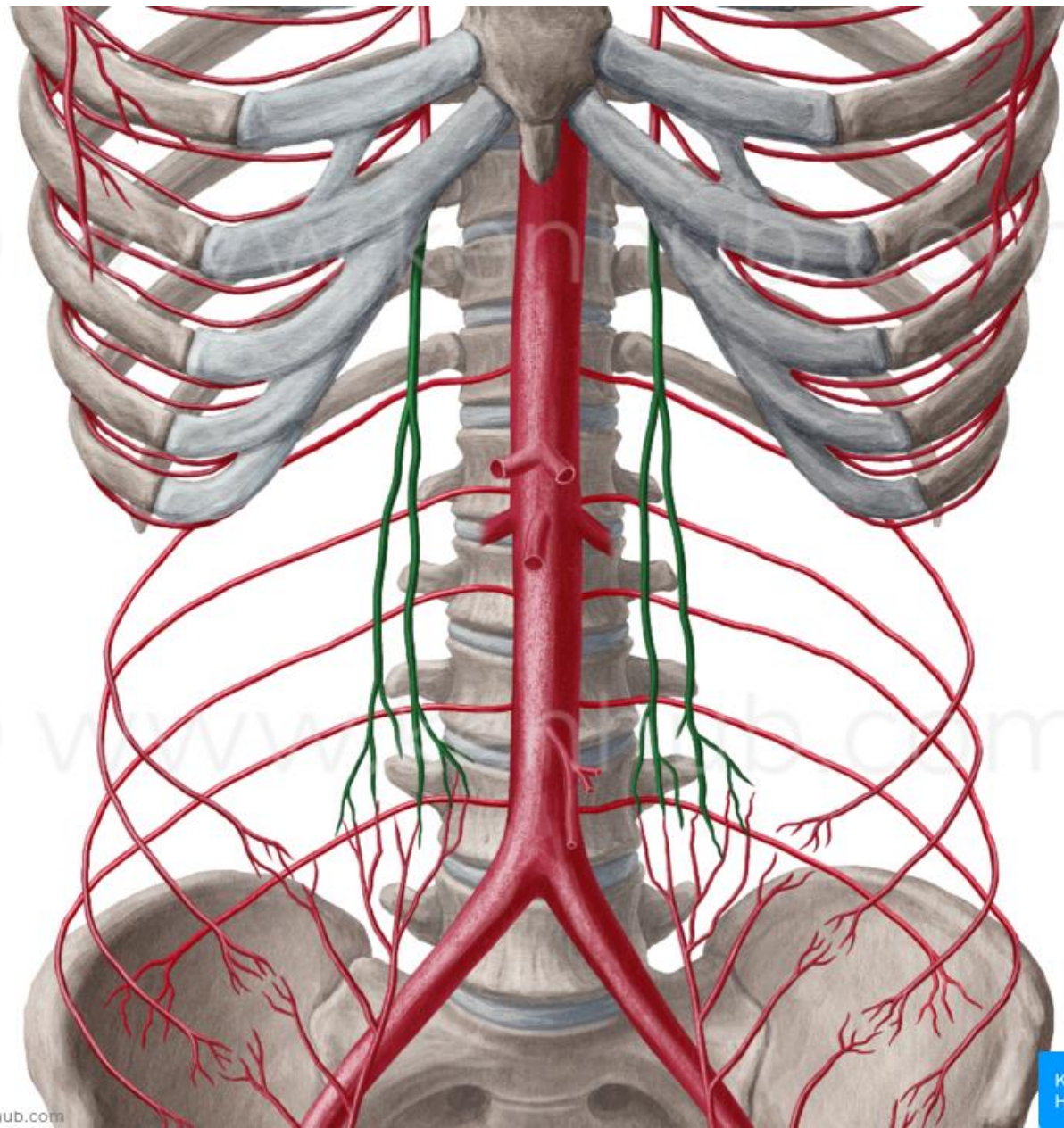
Větve:

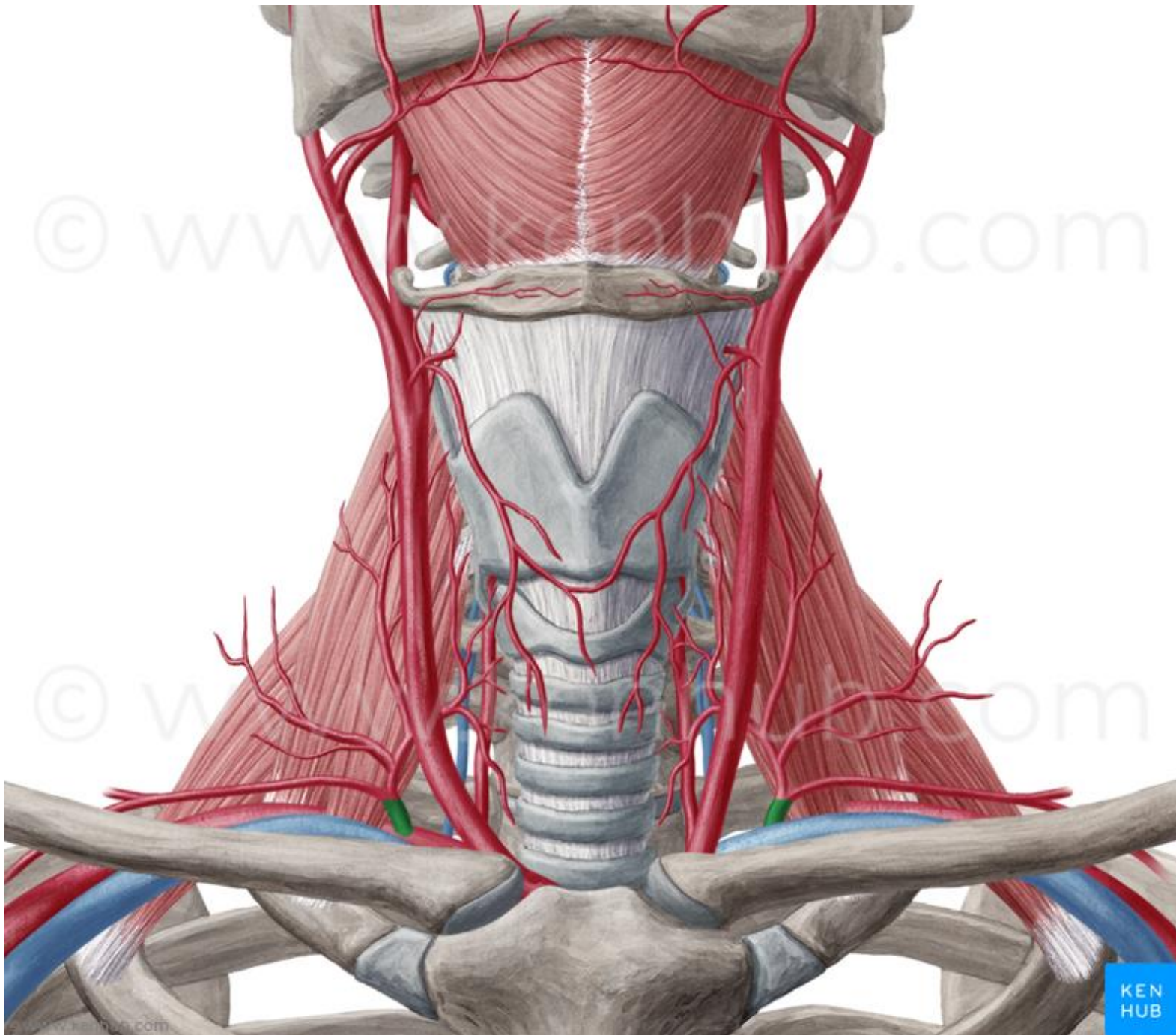
- 1) **a. vertebralis** (mozek)
- 2) **truncus thyrocervicalis**
(ke štítné žláze (a. thyroidea inferior),
pro svaly lopatky (a. suprascapularis) a
krku (a. cervicalis ascendens, a. cervicalis superficialis))
- 3) **truncus costocervicalis**
pro hluboké šíjové svaly (a. cervicalis profunda)
a první dvě mezižebří (a. intercostalis suprema)
- 4) **a. thoracica interna** pro m. rectus abdominis
(a. epigastrica superior) a pro bránici (a. musculophrenica)
- 5) **a. transversa colli** (šíjové svaly, svaly pletence HK, m. trapezius)

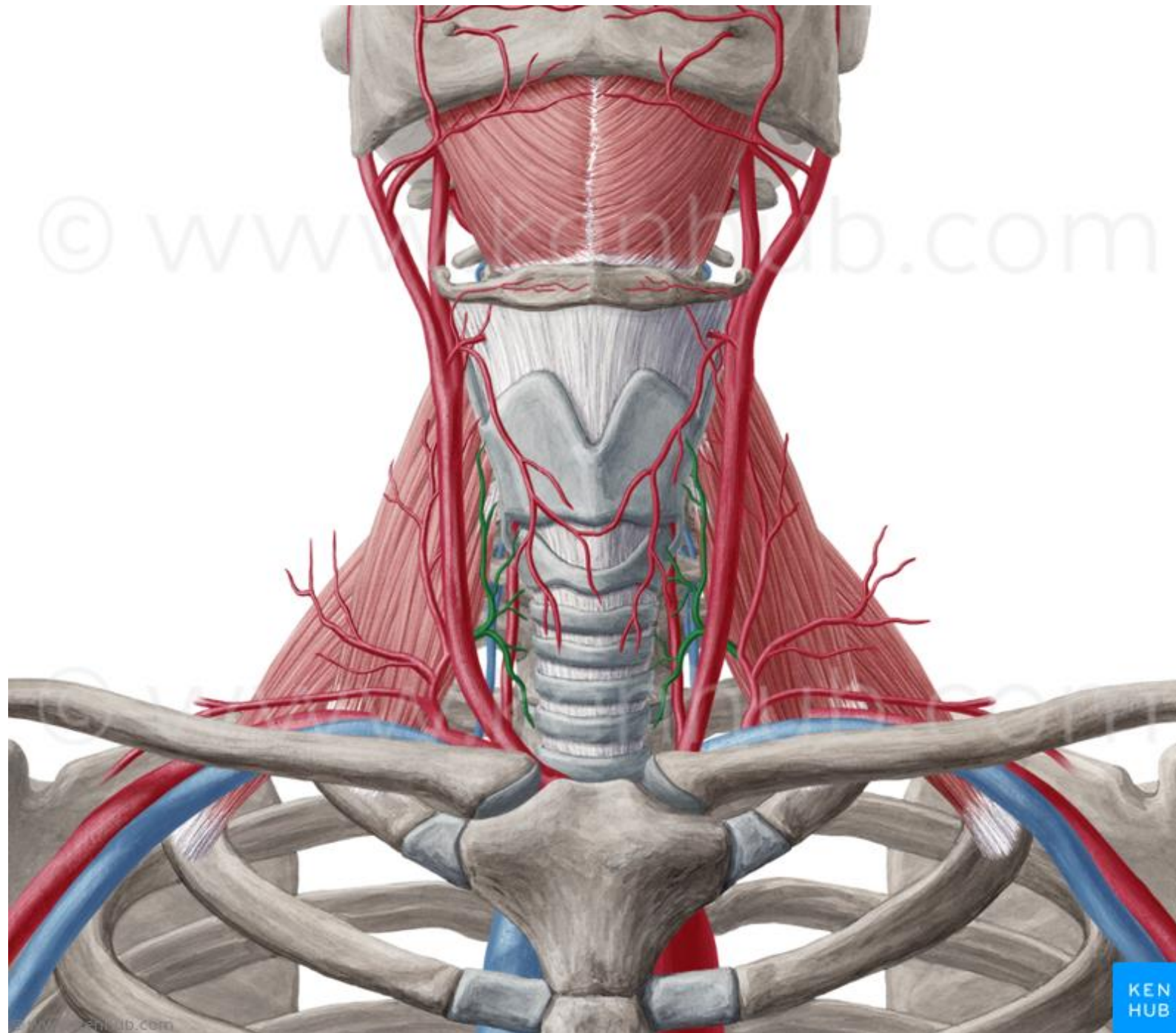


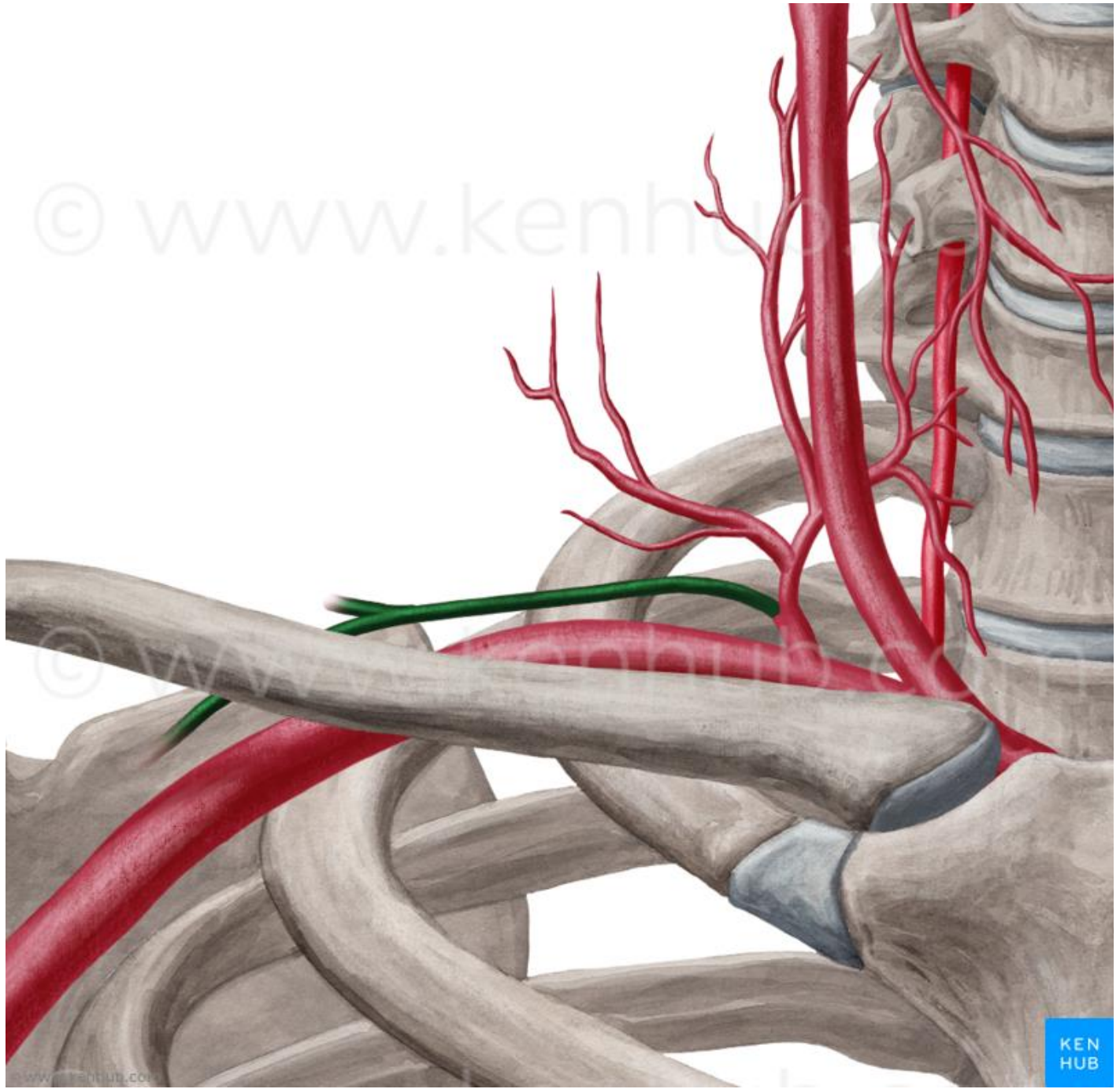


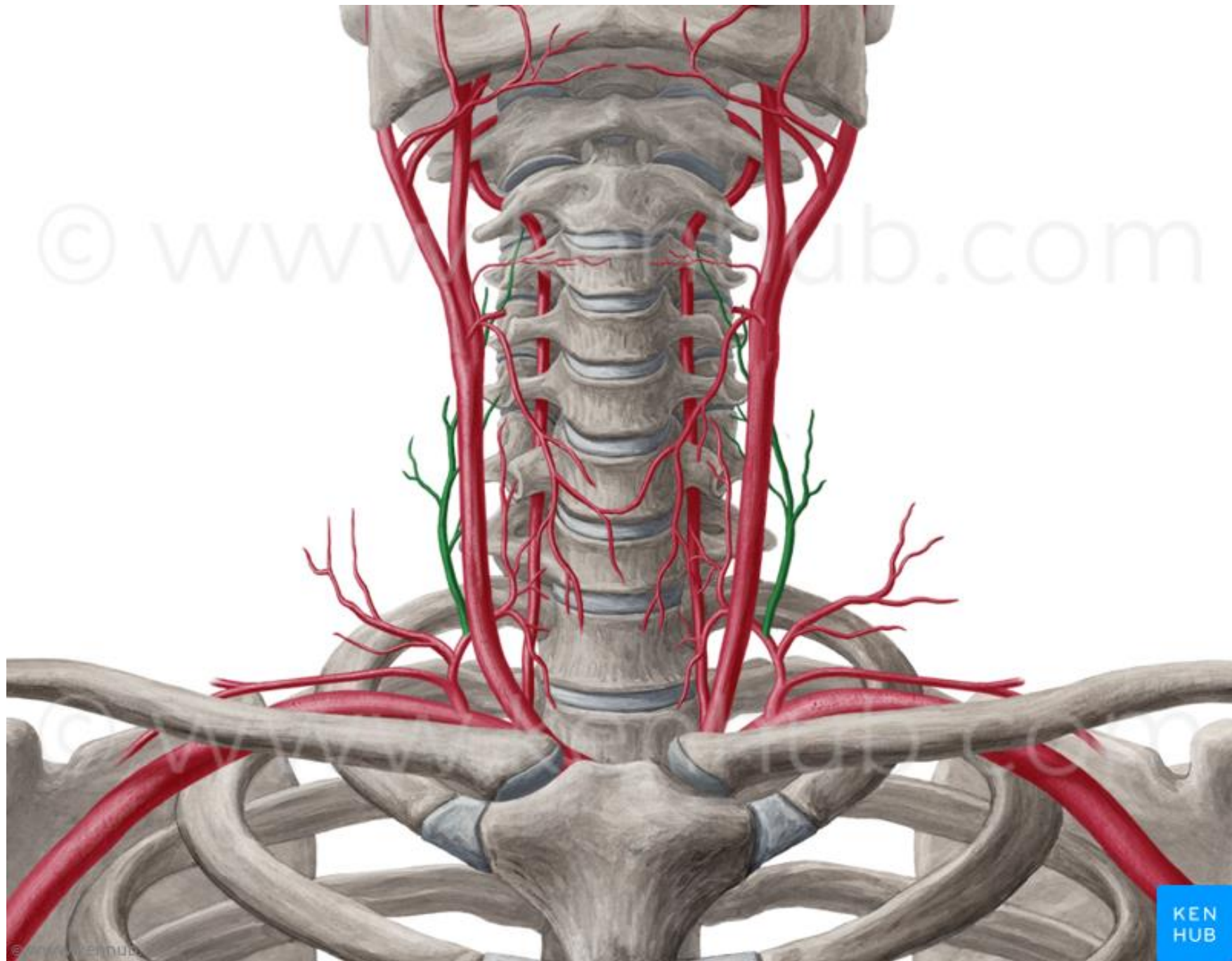


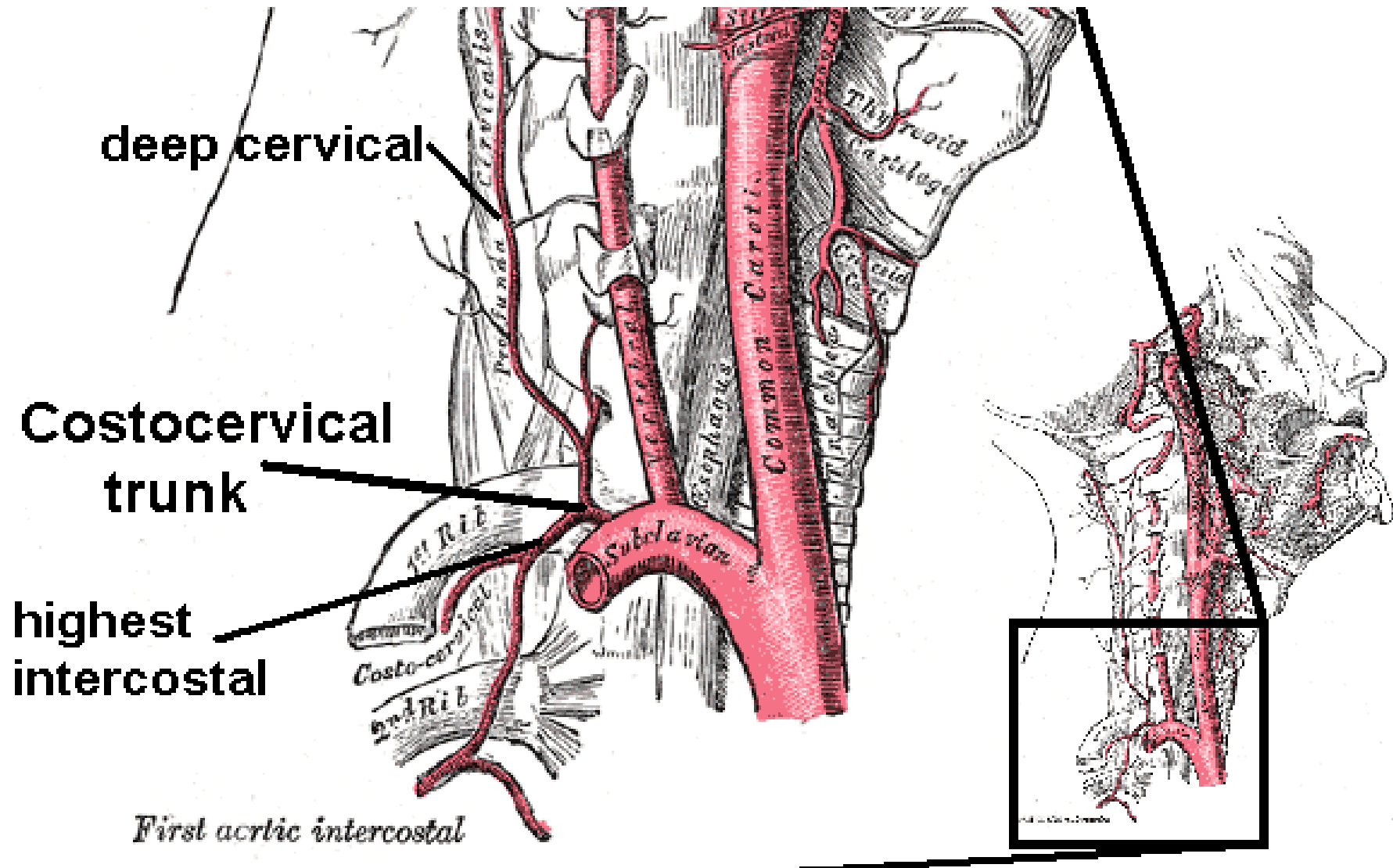




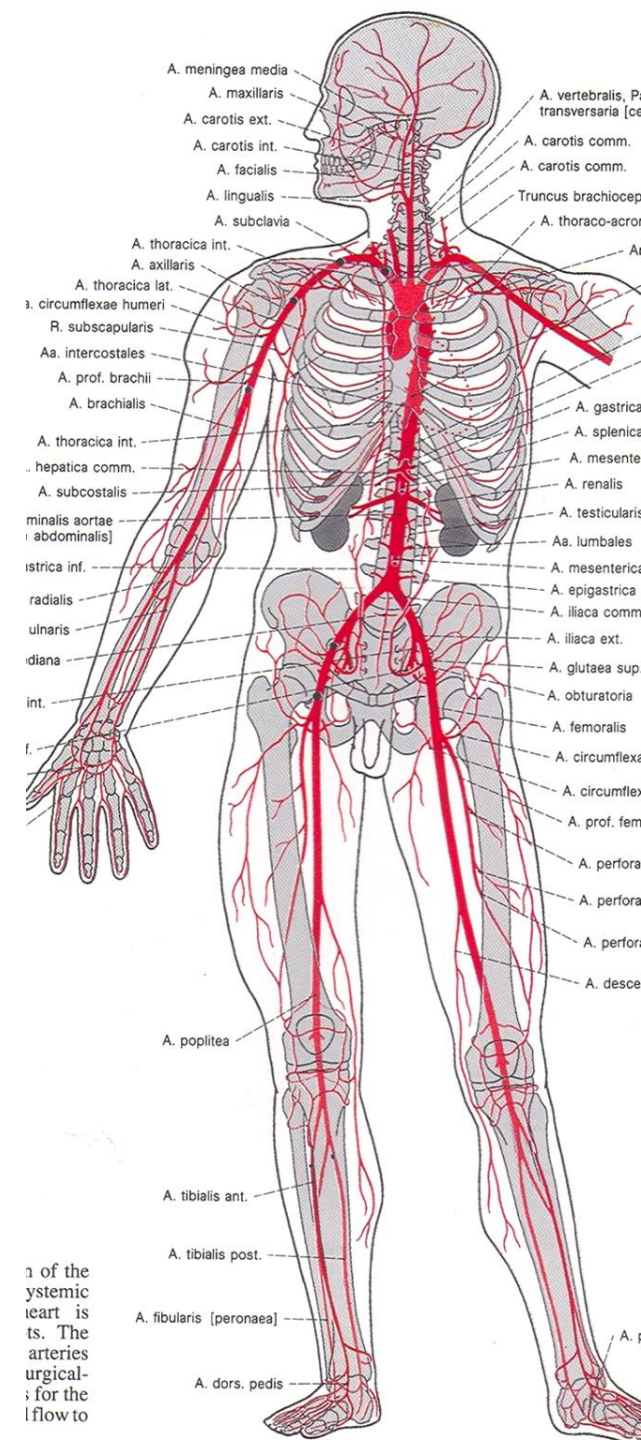
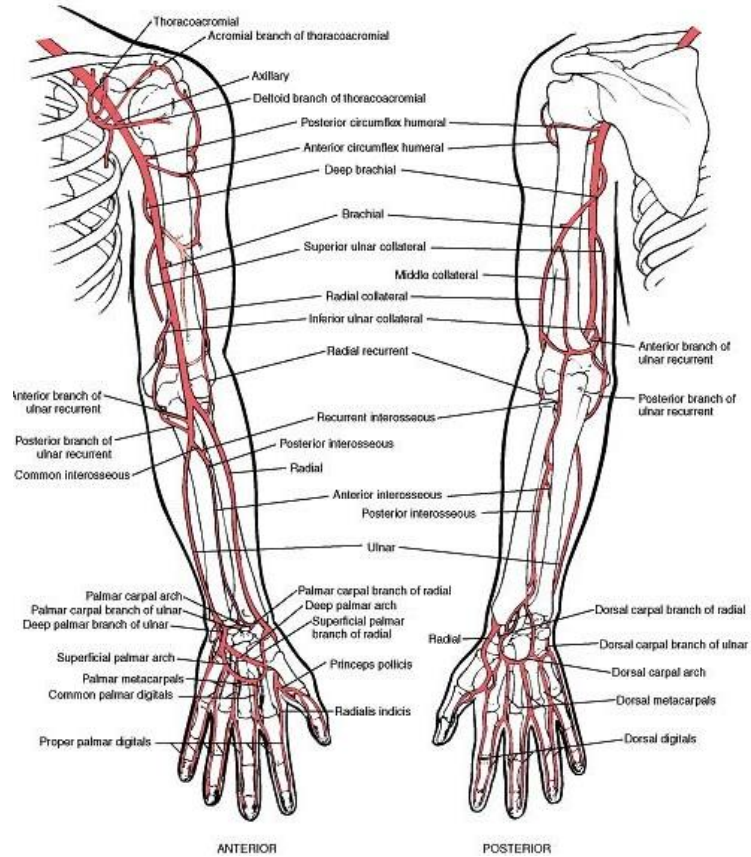








Aa. membri superioris

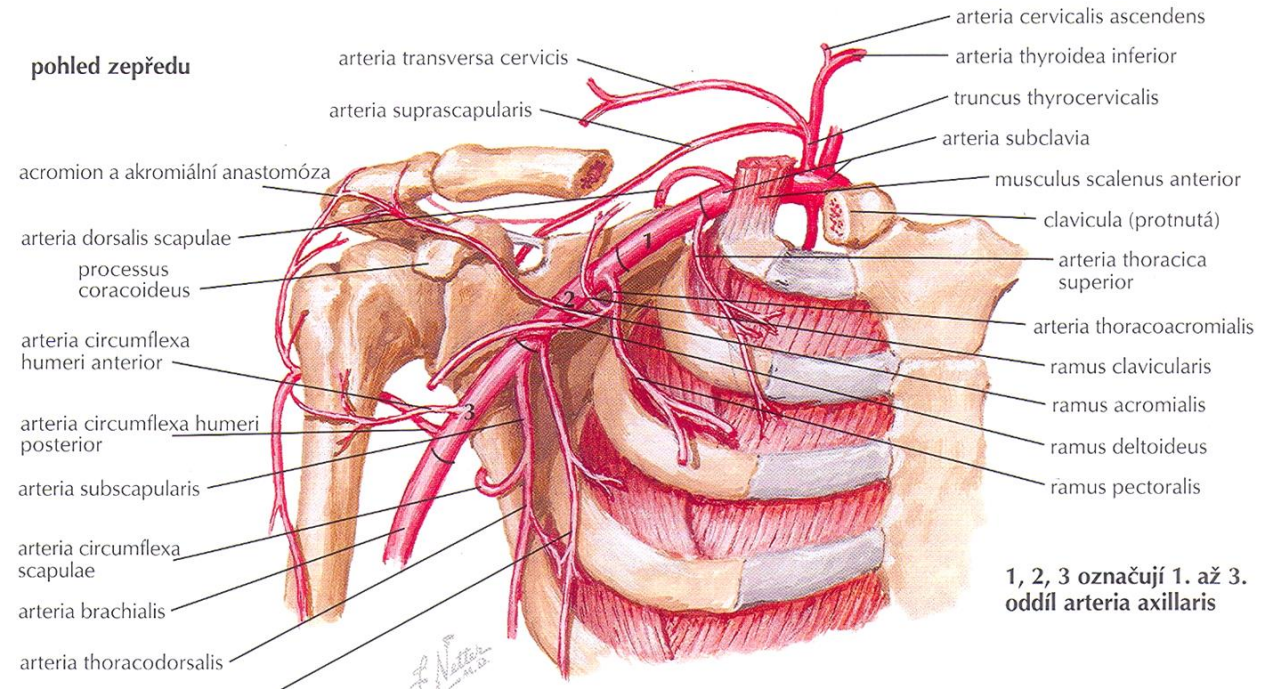


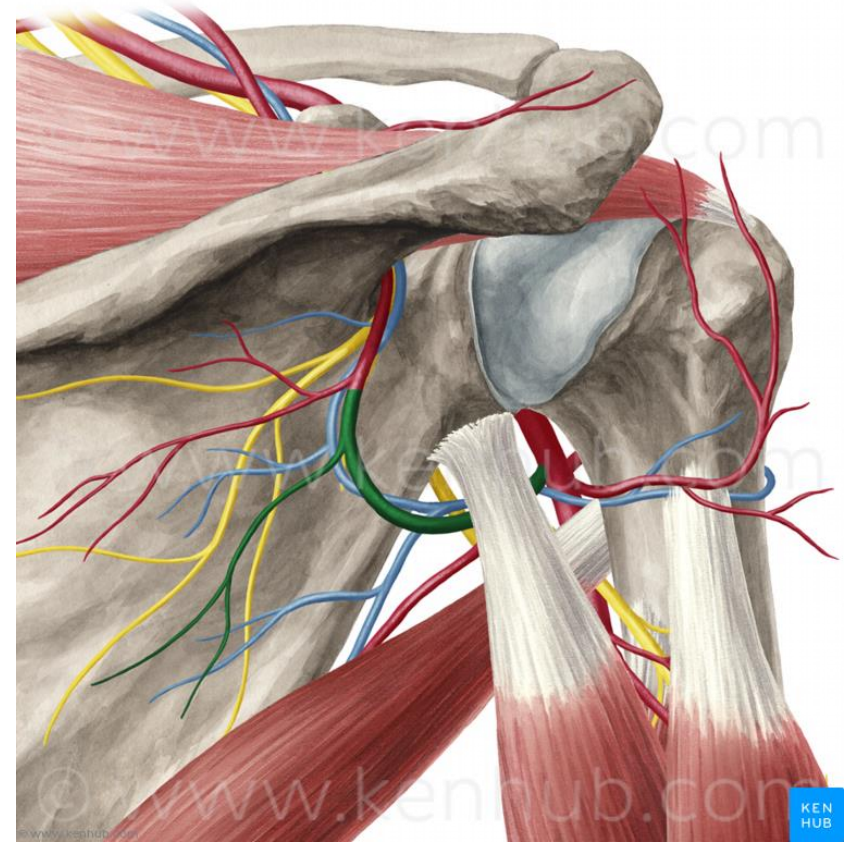
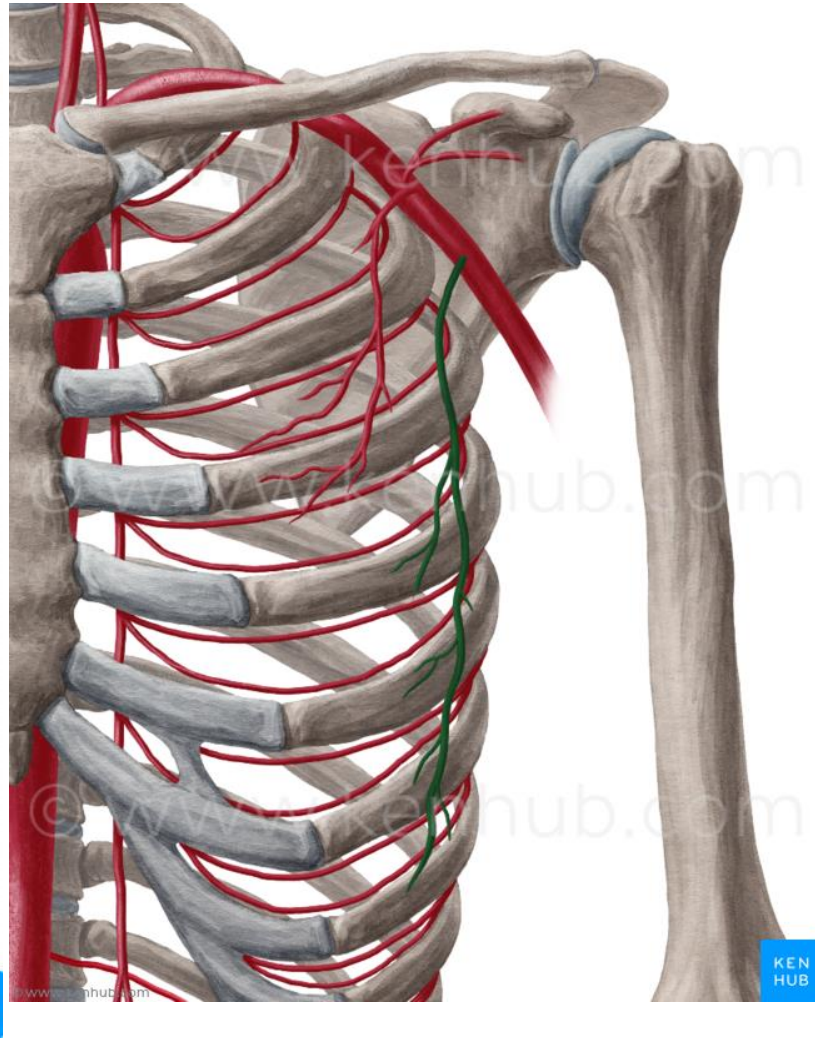
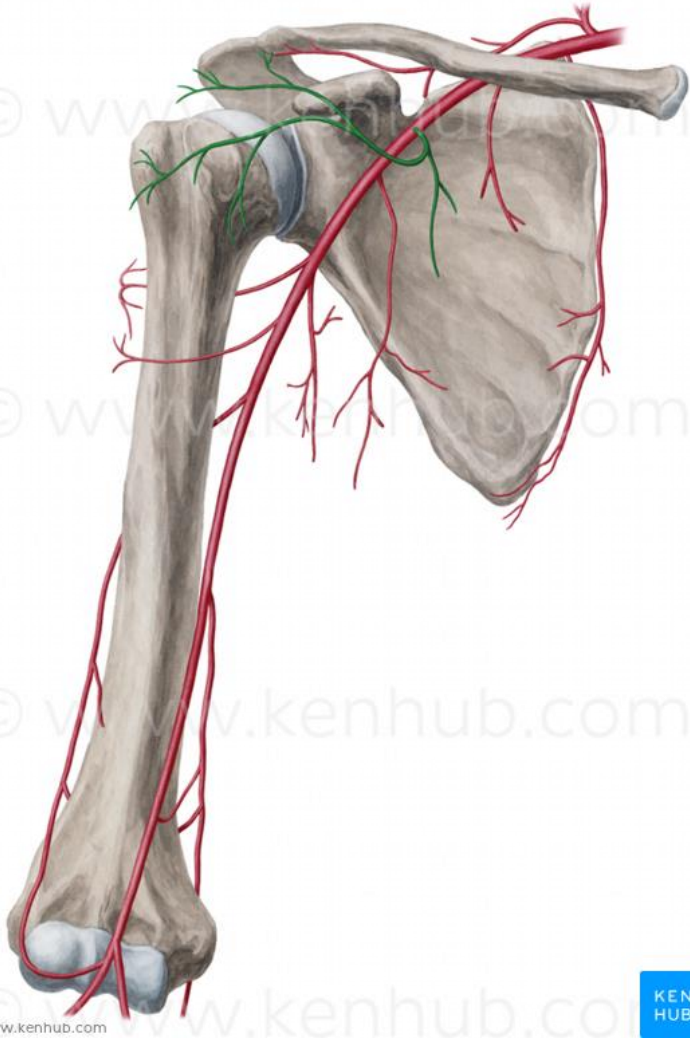
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flow to

A. axillaris

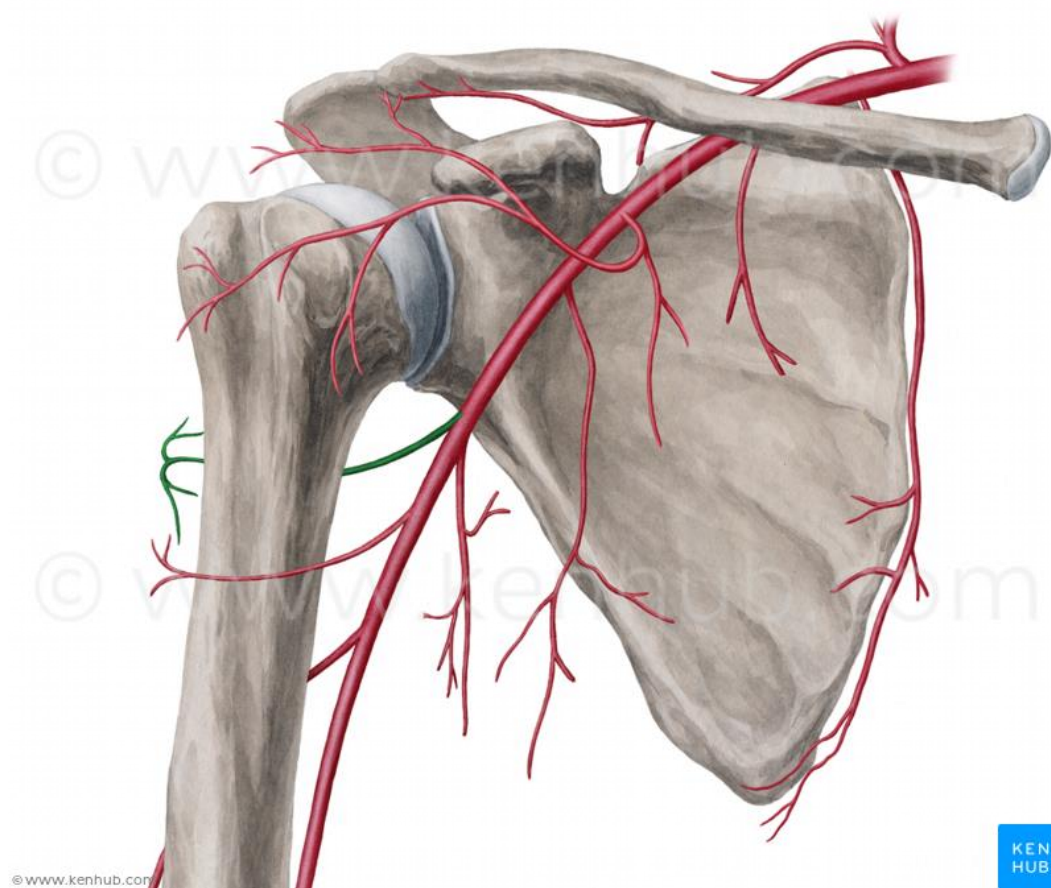
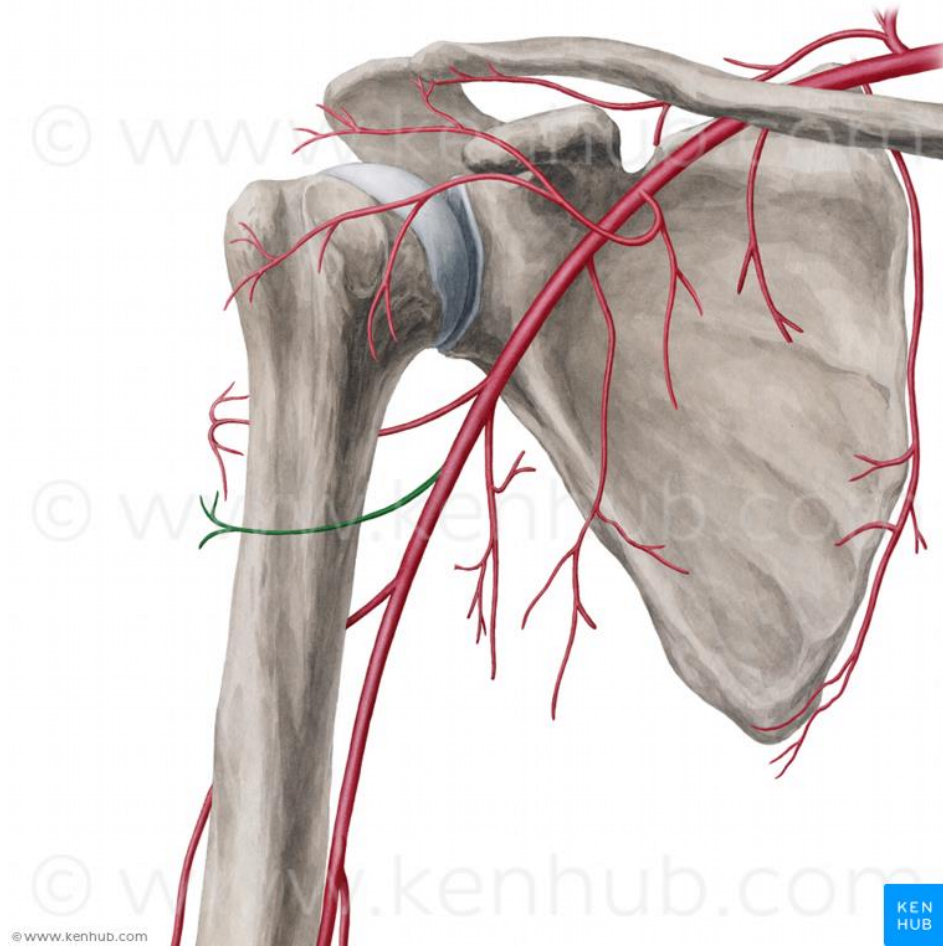
od 1. žebra po distální okraj šlachy m. pectoralis major

- 1) svalové větve (rr. Subscapulares)
- 2) a. thoracica suprema (první dvě mezižebří)
- 3) a. thoracoacromialis (ramenní kloub, m. deltoideus, mm. pectorales)
- 4) a. thoracica lateralis (m. serratus anterior)
- 5) a. subscapularis (a. circumflexa scapulae, a. thoracodorsalis pro m. latissimus dorsi)
- 6) a. circumflexa humeri anterior
- 7) a. circumflexa humeri posterior (přes foramen humerotricipitale do m. deltoideus)



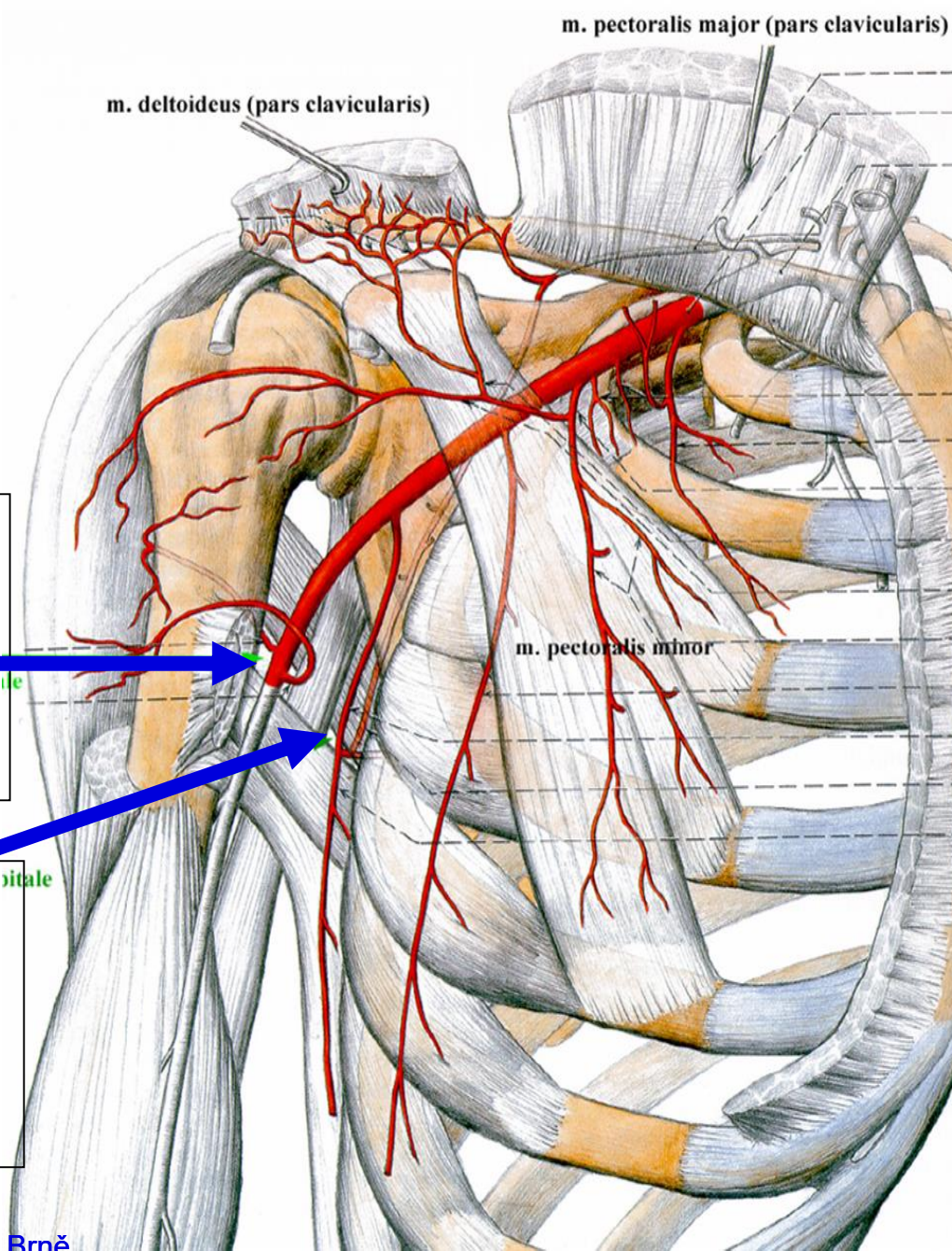


Anastomóza a. circumflexa humeri anterior et posterior



Foramen humerotricipitale:
n. axillaris,
a. circumflexa
humeri posterior

Foramen omotricipitale:
a. circumflexa scapulae -
anastomosa s a.
suprascapularis



A. brachialis

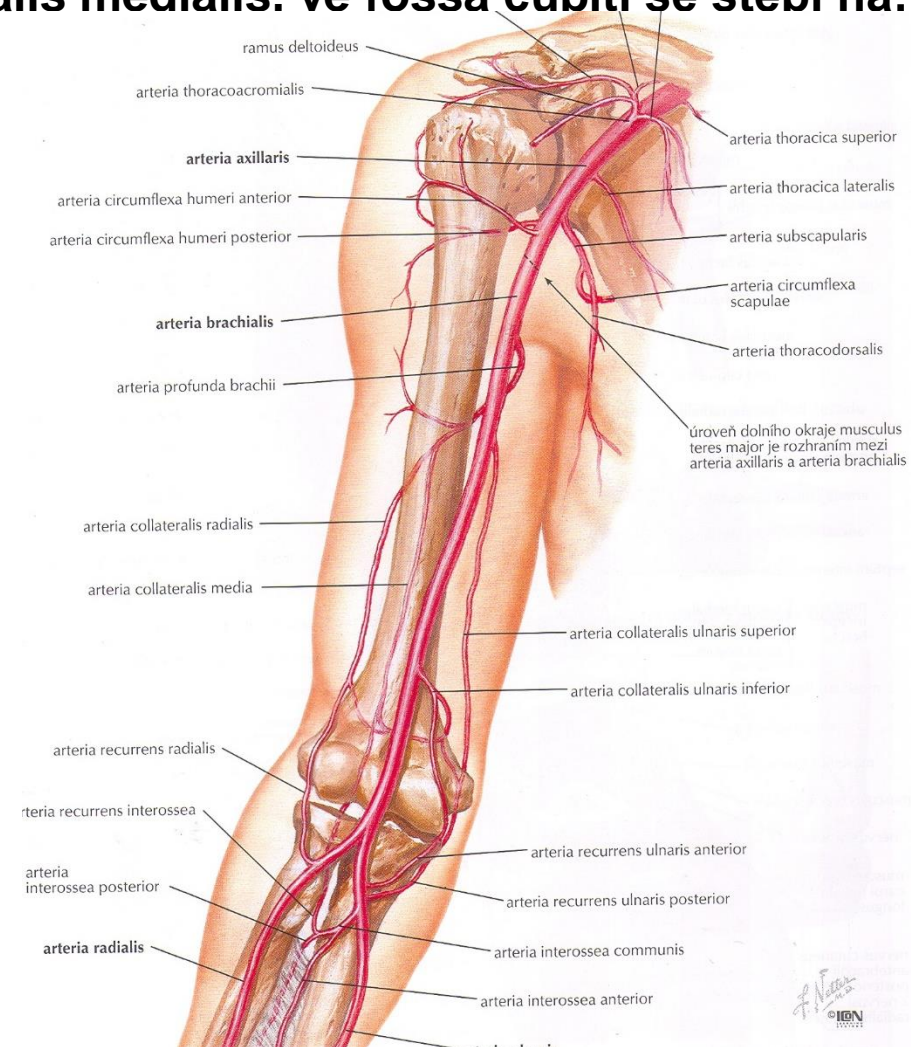
- od okraje m. pectoralis major, v sulcus bicipitalis medialis. ve fossa cubiti se štěpí na: a. radialis a a. ulnaris

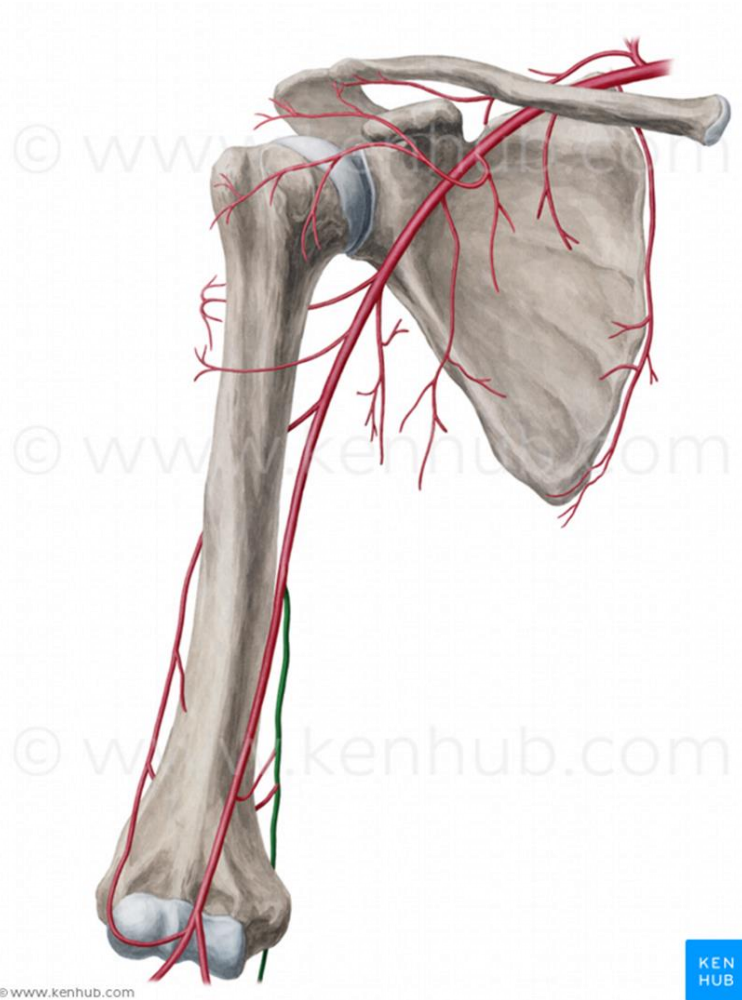
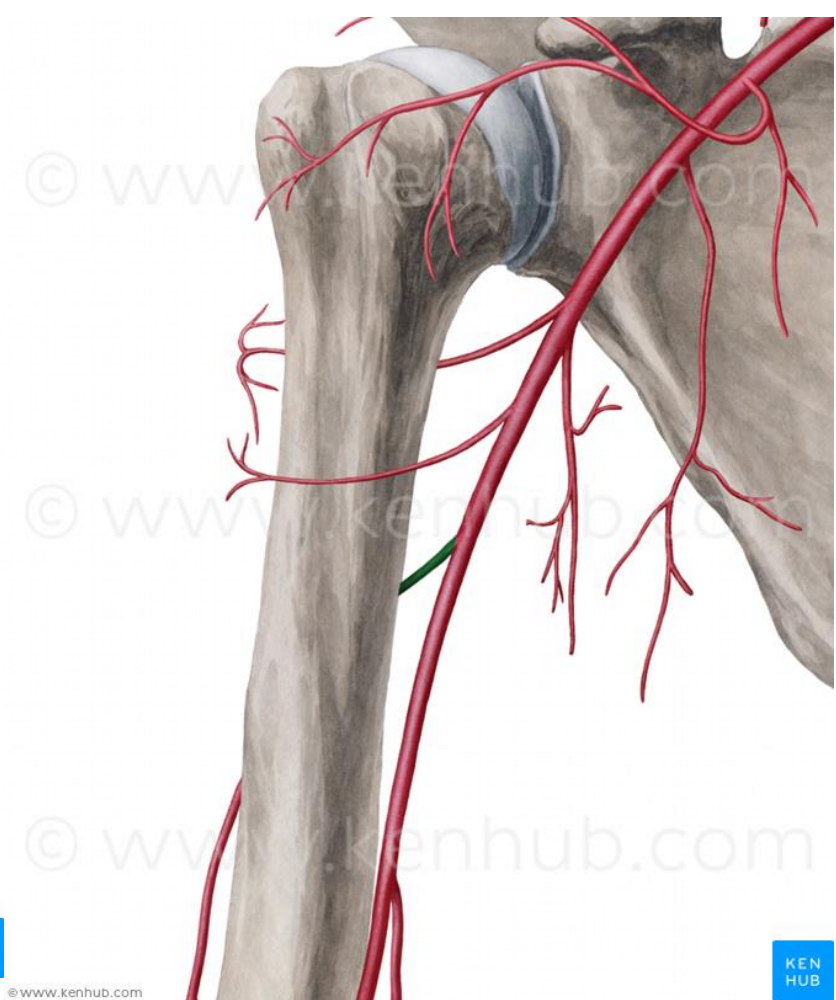
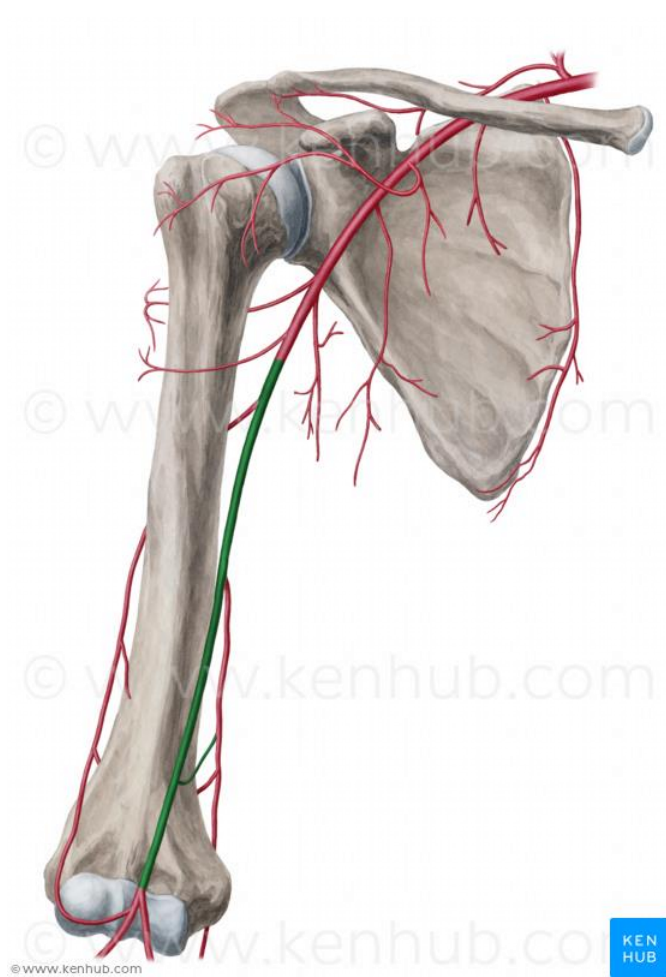
větve:

- 1) a. profunda brachii (v sulcus n. radialis)
- 2) a. collateralis ulnaris superior (za med. epikondylem, do tepenné sítě kolem loketního kloubu)
- 3) a. collateralis ulnaris inferior (do tepenné sítě kolem loketního kloubu)

konečné větve:

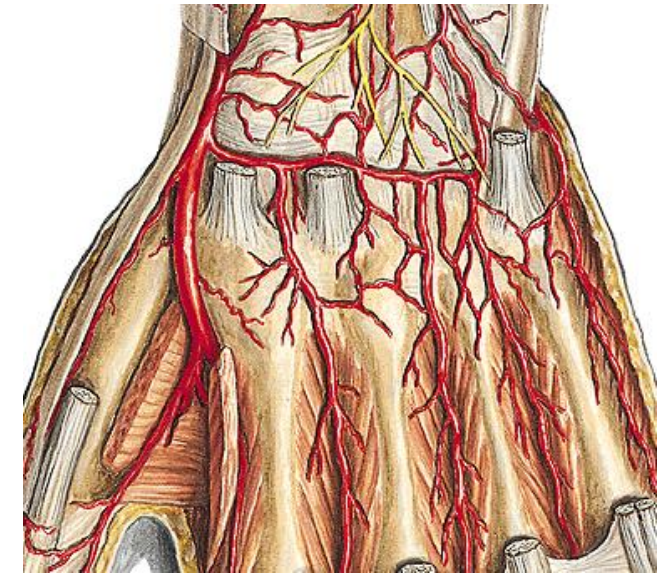
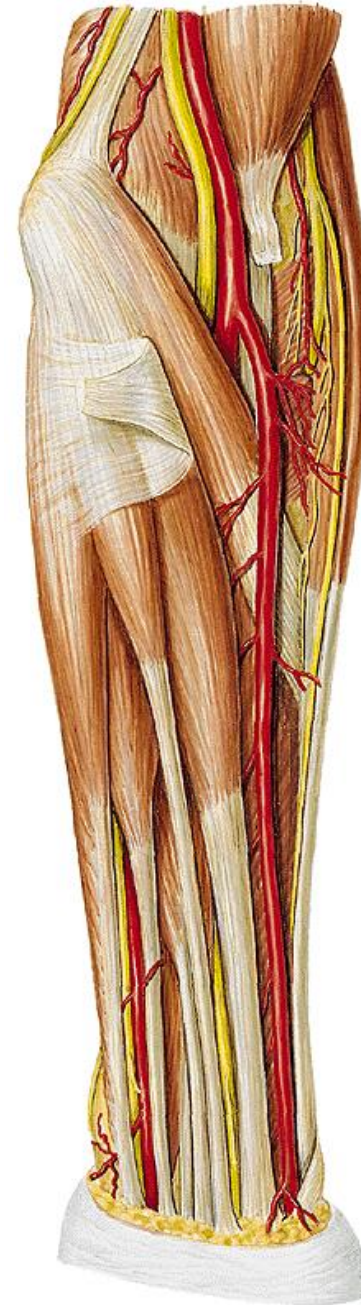
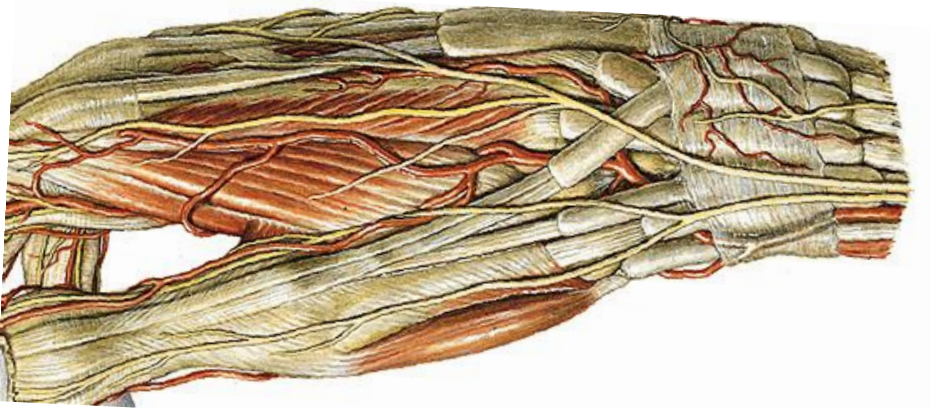
- 4) a. radialis a a. ulnaris





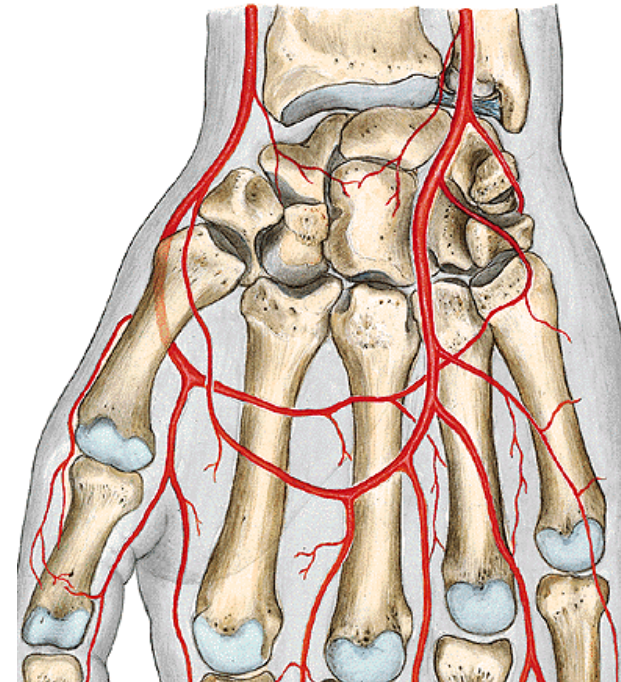
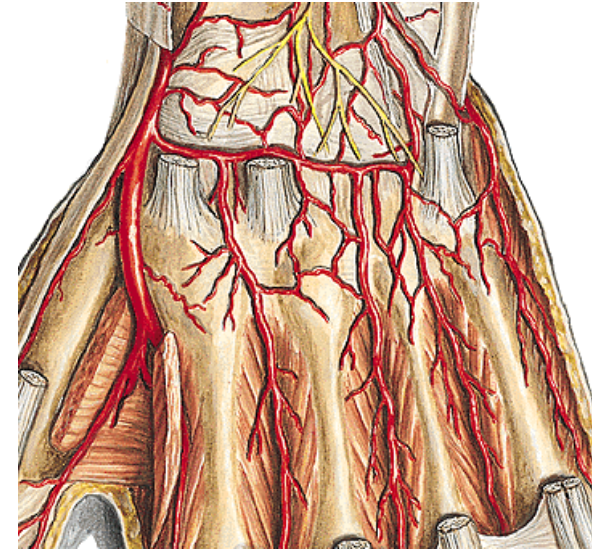
A. radialis

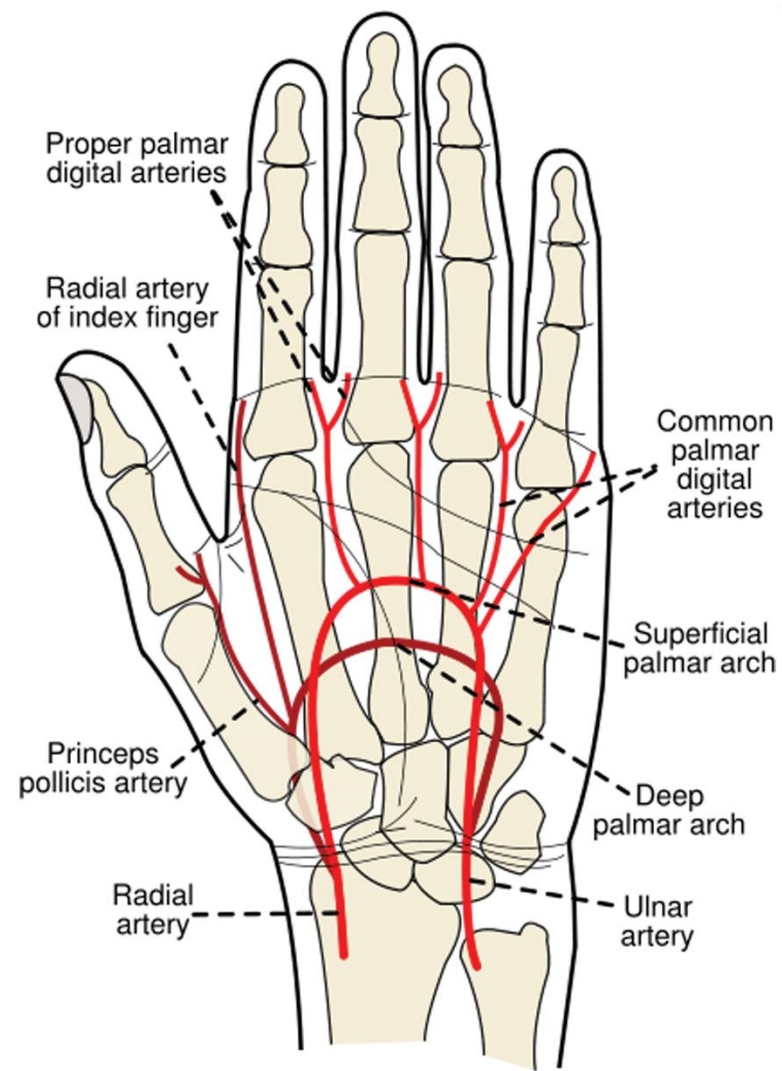
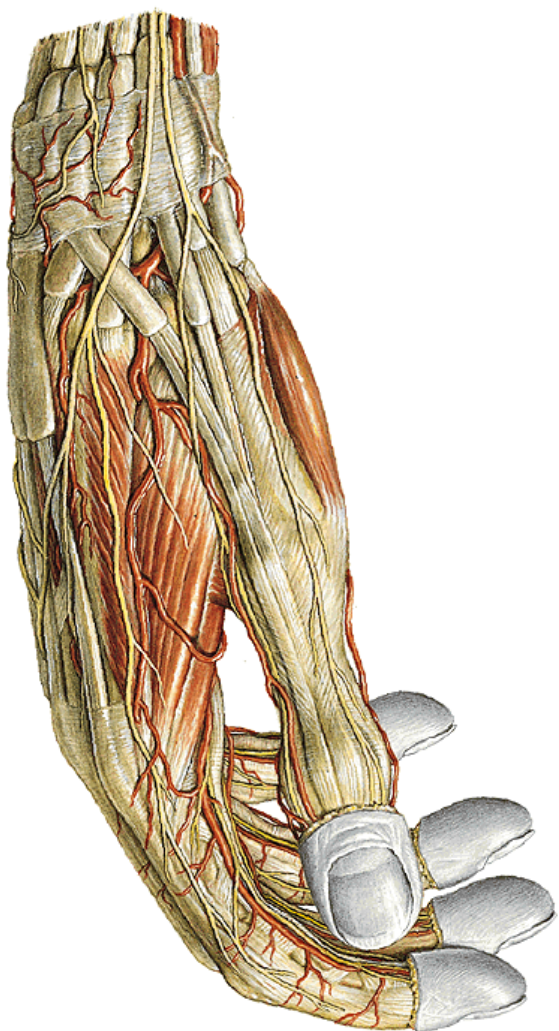
pod m. brachioradialis, do foveola radialis, pod šlachou m. extensor pollicis longus (**foveola radialis** mezi dlouhým a krátkým extensorem) jde na hřbet ruky, prostoupí m. interosseus dorsalis I. a na dlaní vydá konečné větve: **arcus palmaris profundus** a **princeps pollicis**



Větve :

- a) větve k loketnímu kloubu
- b) svalové větve (radiální a palmární skupina)
- c) r. palmaris superficialis et profundus –
spoluvytváří arcus palmaris superficialis et profundus
- d) a. princeps pollicis- pro palec a lat. okraj ukazováku



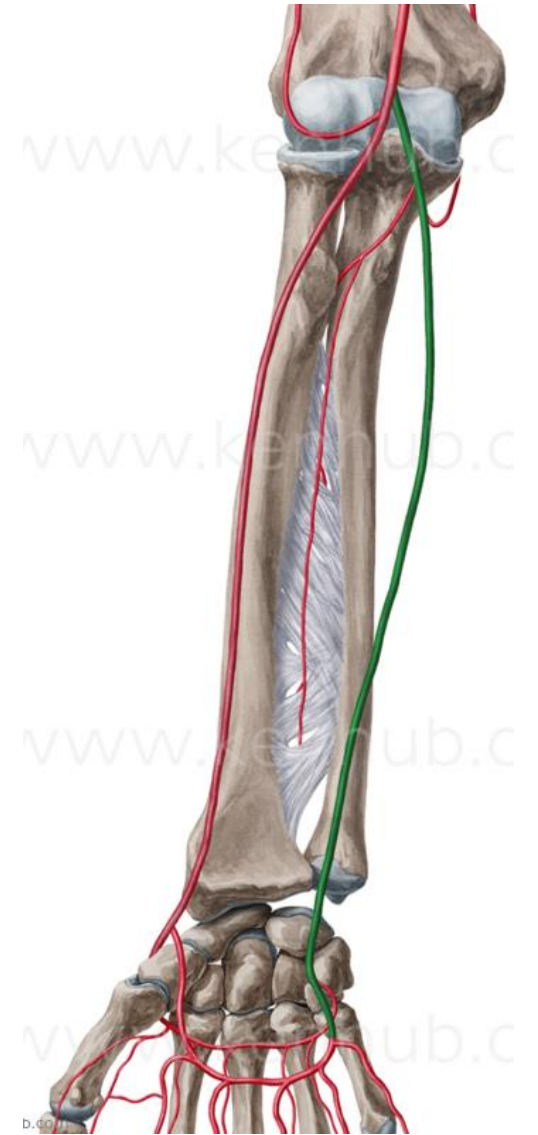
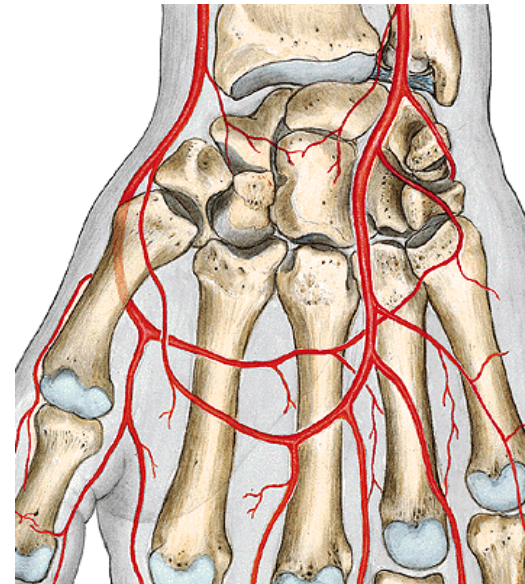
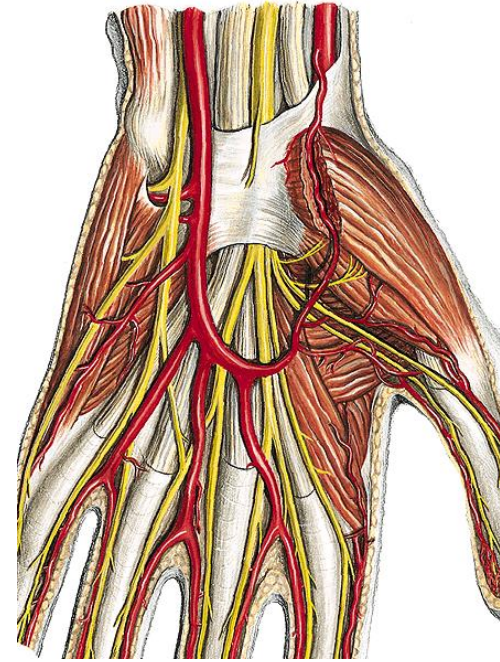


A. ulnaris

- mezi m. flexor digitorum profundus a superficialis
- distálně mezi m. flexor carpi ulnaris a m. flexor digitorum superficialis
- Do dlaně po povrchu retinaculum flexorum po radiální straně os pisiforme a dělí se na konečné

větve:

- **r. palmaris superficialis**
- **r. palmaris profundus**



větve:

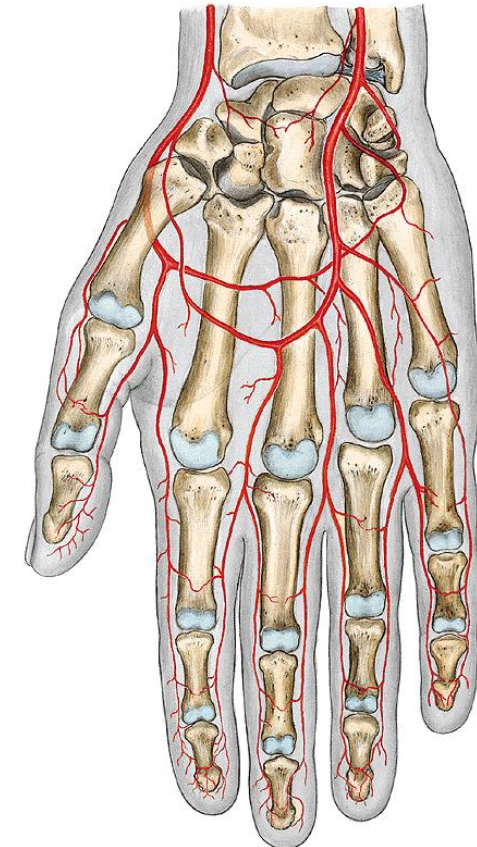
- a) svalové větve
- b) a. interossea communis
- c) k radiokarpálnímu kloubu
- d) r. palmaris superficialis
- e) r. palmaris profundus

ARCUS PALMARIS SUPERFICIALIS

-aa. digitales palmares communes → aa. digitales palmares propriae

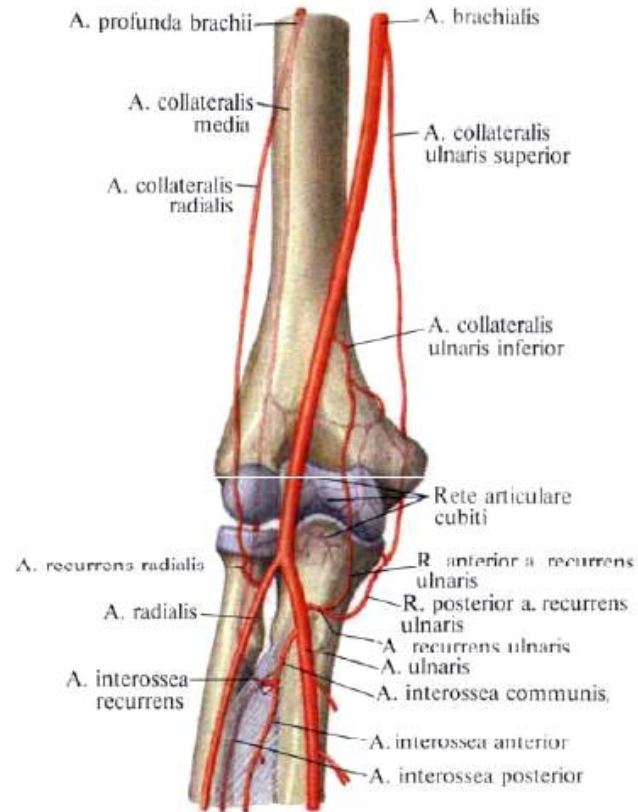
ARCUS PALMARIS PROFUNDUS

-aa. metacarpae palmares – spojují se s aa. digitales communes



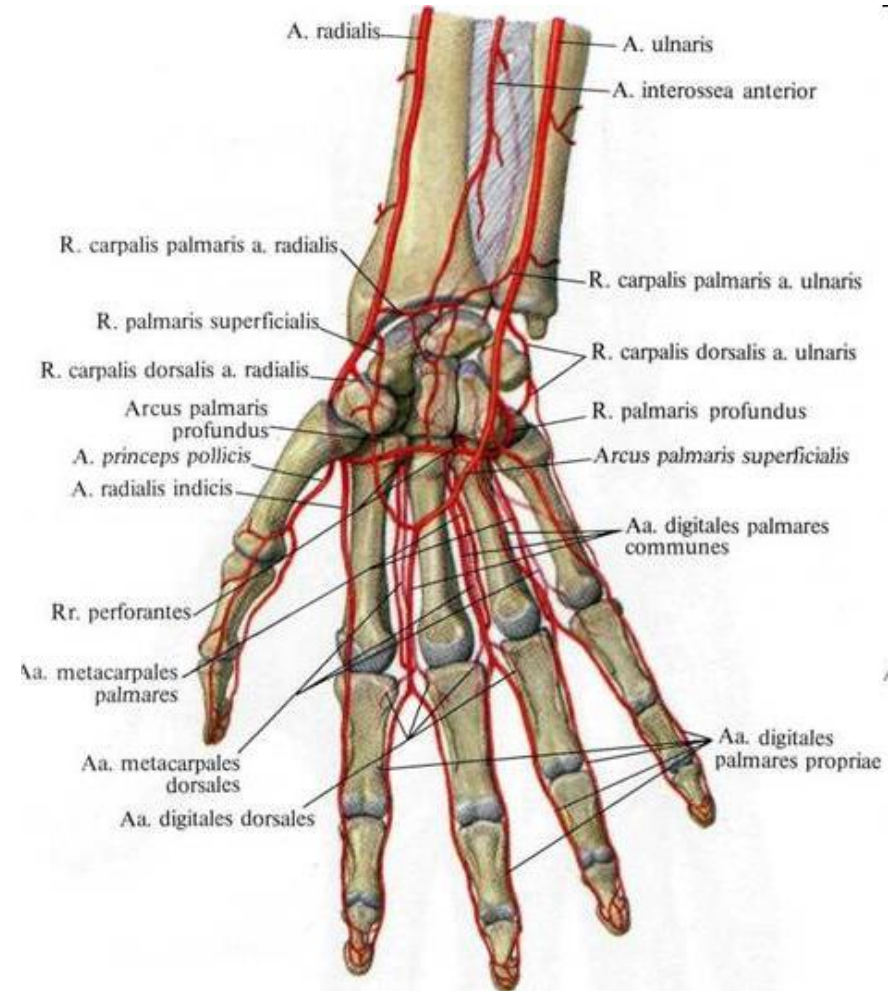
RETE ARTICULARE CUBITI **RETE CARPI PALMARE ET DORSALE**

RETE ARTICULARE CUBITI

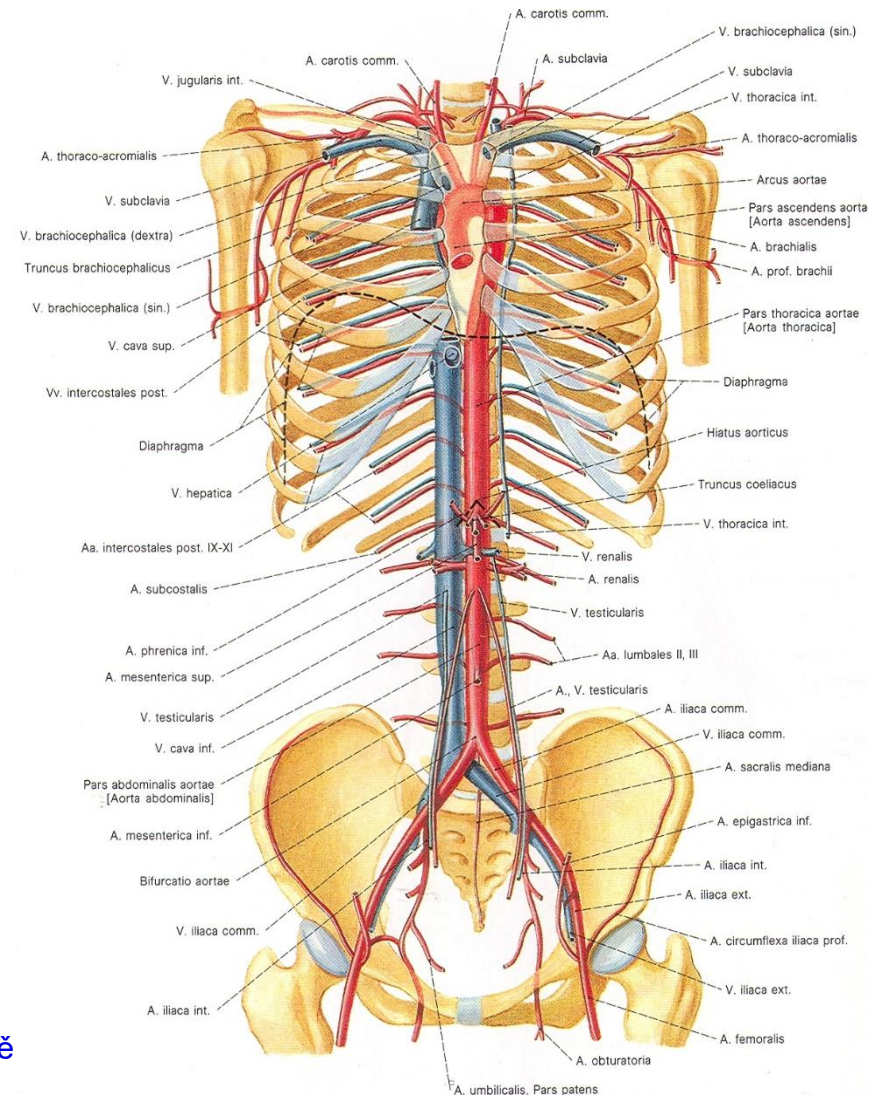
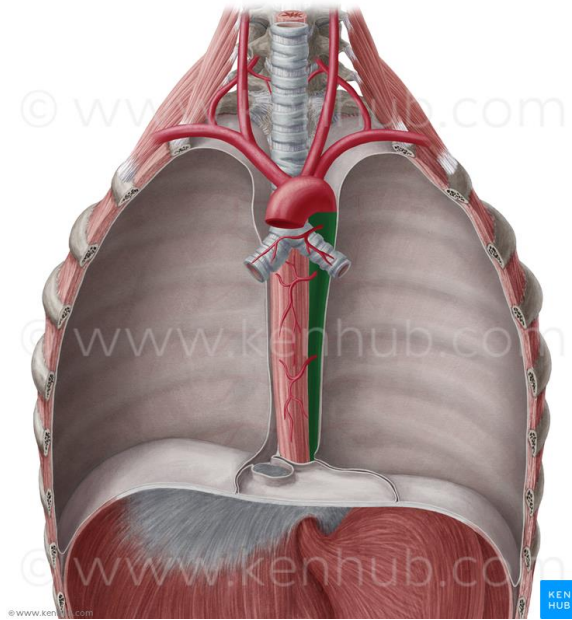


RETE CARPI PALMARE

RETE CARPI DORSALE



Aorta descendens - Th3- L4



AORTA THORACICA – od Th₃ k bránici (zadní mediastinum)

Parietální větve:

aa. intercostales posteriores (mezižebří)

aa. phrenicae superiores (bránice)

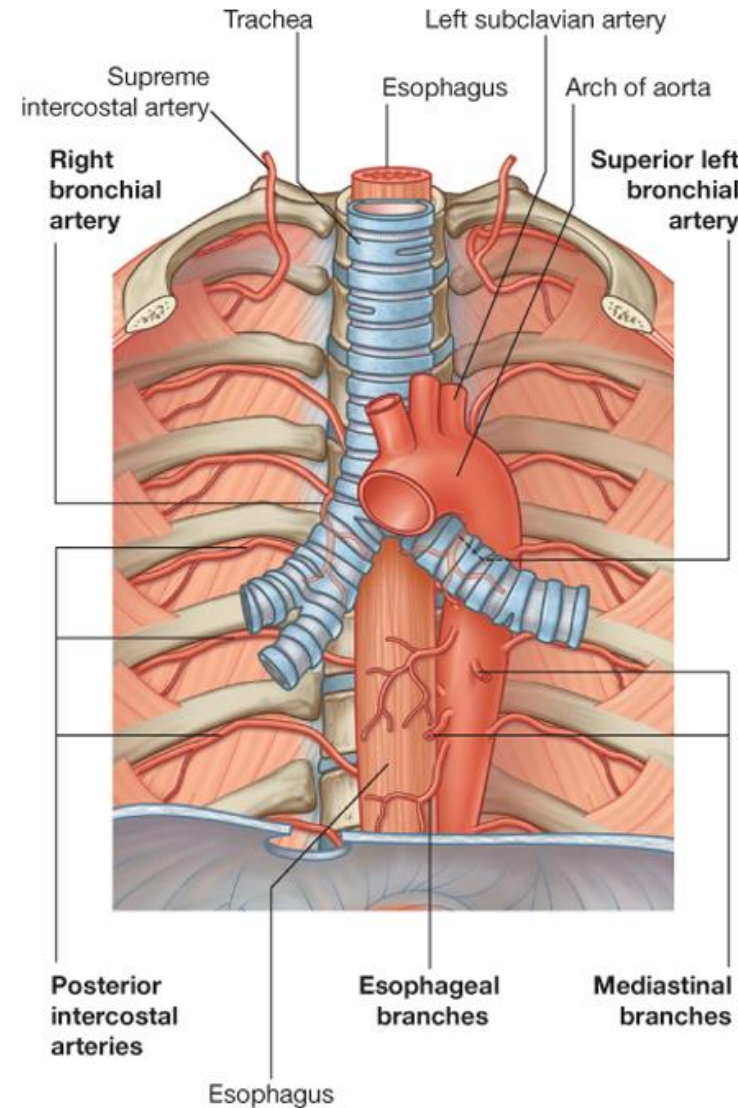
Viscerální větve:

rr. bronchiales

rr. oesophagei

rr. pericardiaci

rr. mediastinales



AORTA ABDOMINALIS – bránice - L4

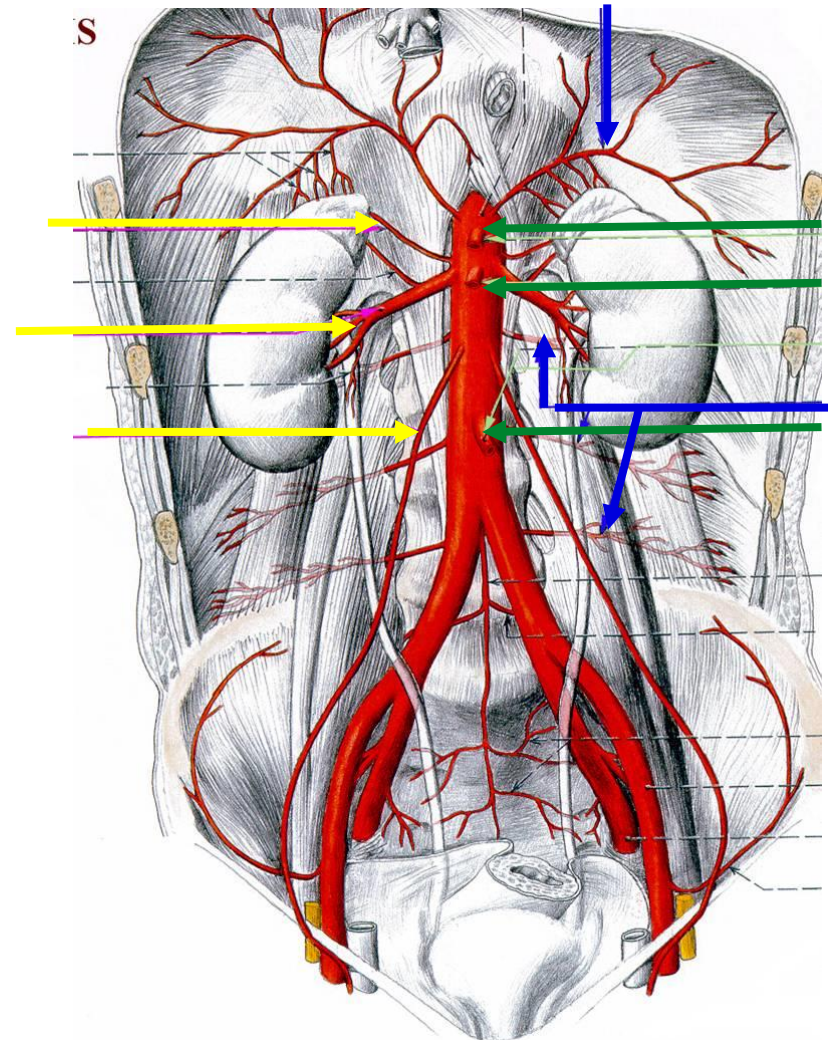
- retroperitoneálně
- L4 bifurcatio aortae

Větve parietální:

- ke stěně břišní dutiny, k bránici (aa. phrenicae inferiores, aa. lumbales)

Větve viscerální:

- nepárové
 - 1) truncus coeliacus (Th₁₂-L₁) - (k žaludku, k játrům, ke slezině)
 - 2) a. mesenterica superior (L₁) (pro celé tenké a část tlustého střeva)
 - 3) a. mesenterica inferior (L₃) (od flexura coli sin. kaudálně až po kraniální část konečníku)



Větve viscerální:

párové

1) k nadledvinám

-aa. suprarenales mediae

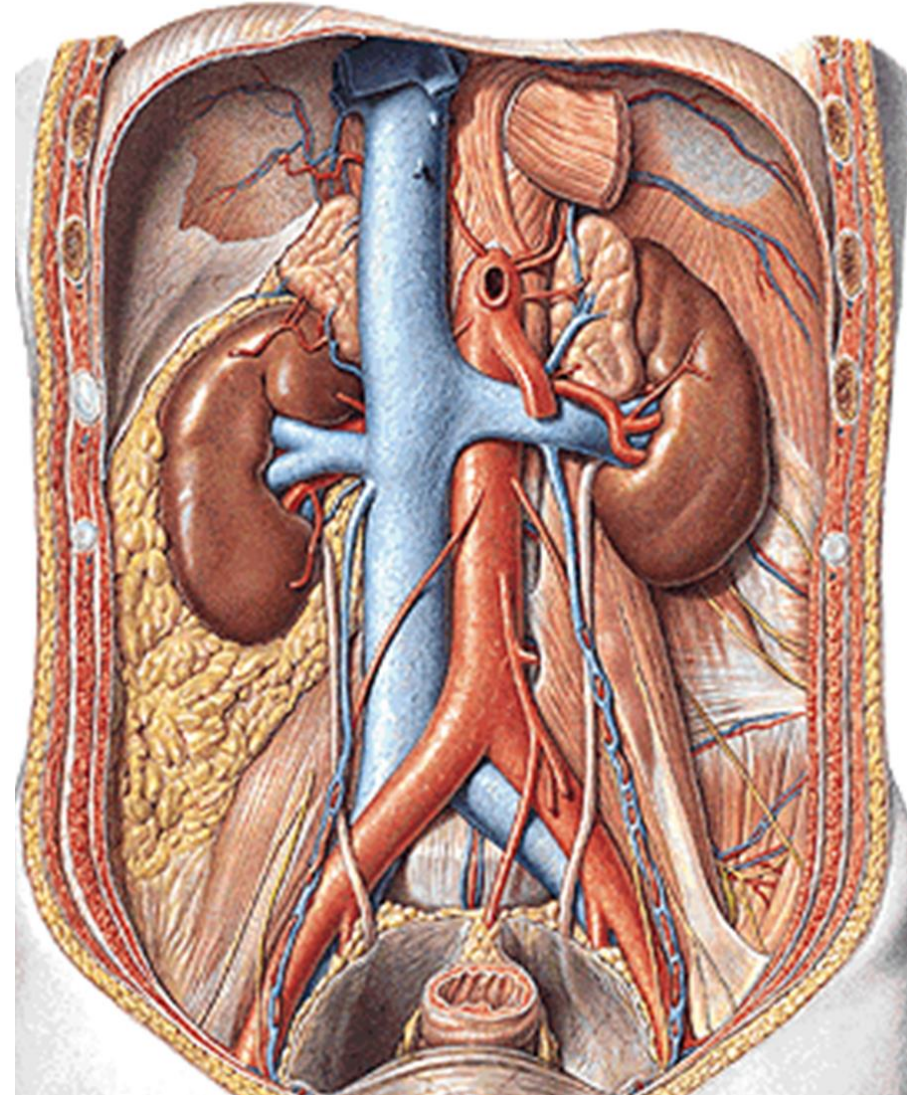
2) k ledvinám

-aa. renales

3) k vaječnům (varlata)

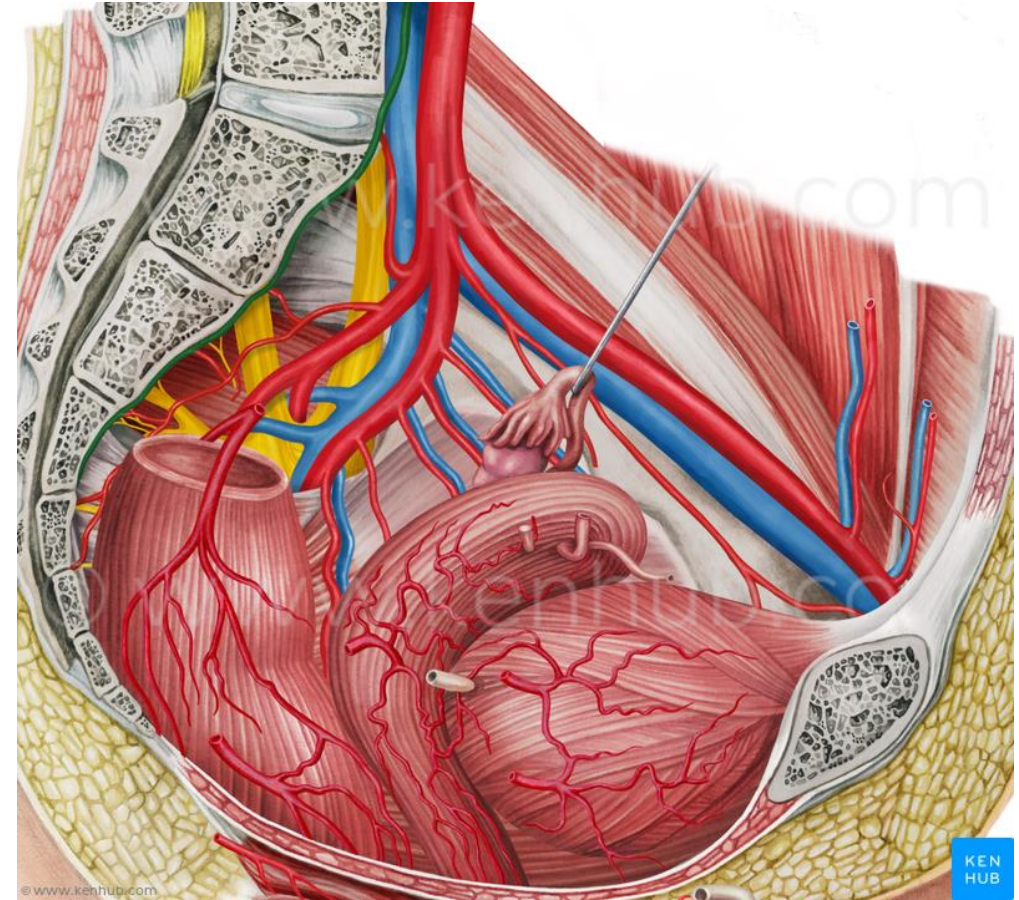
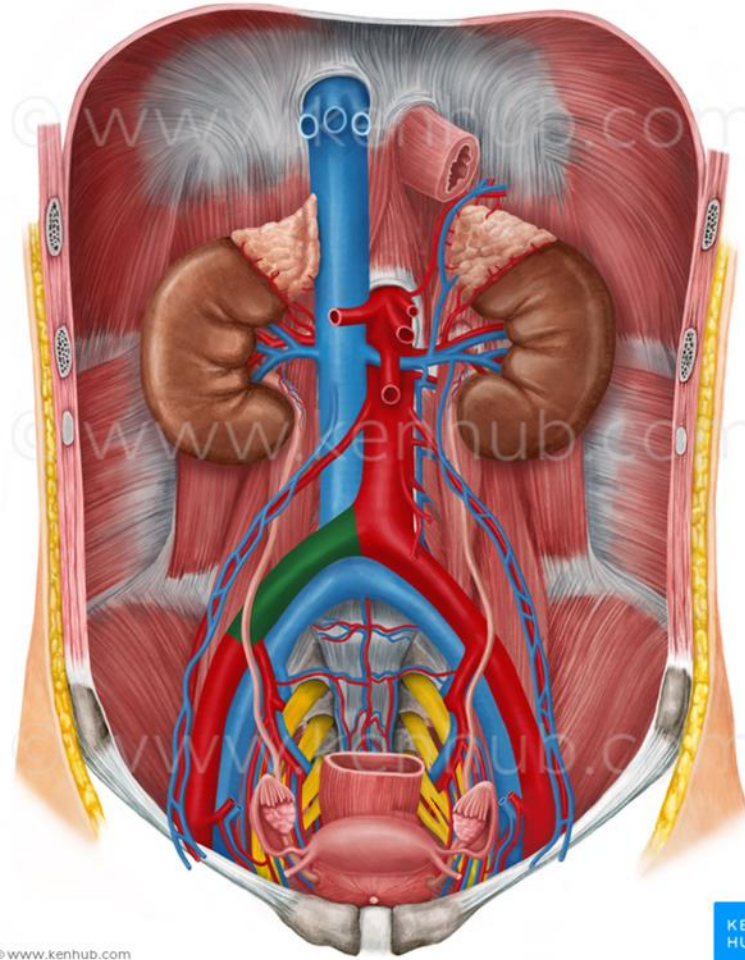
- aa. testiculares

- aa. ovaricae



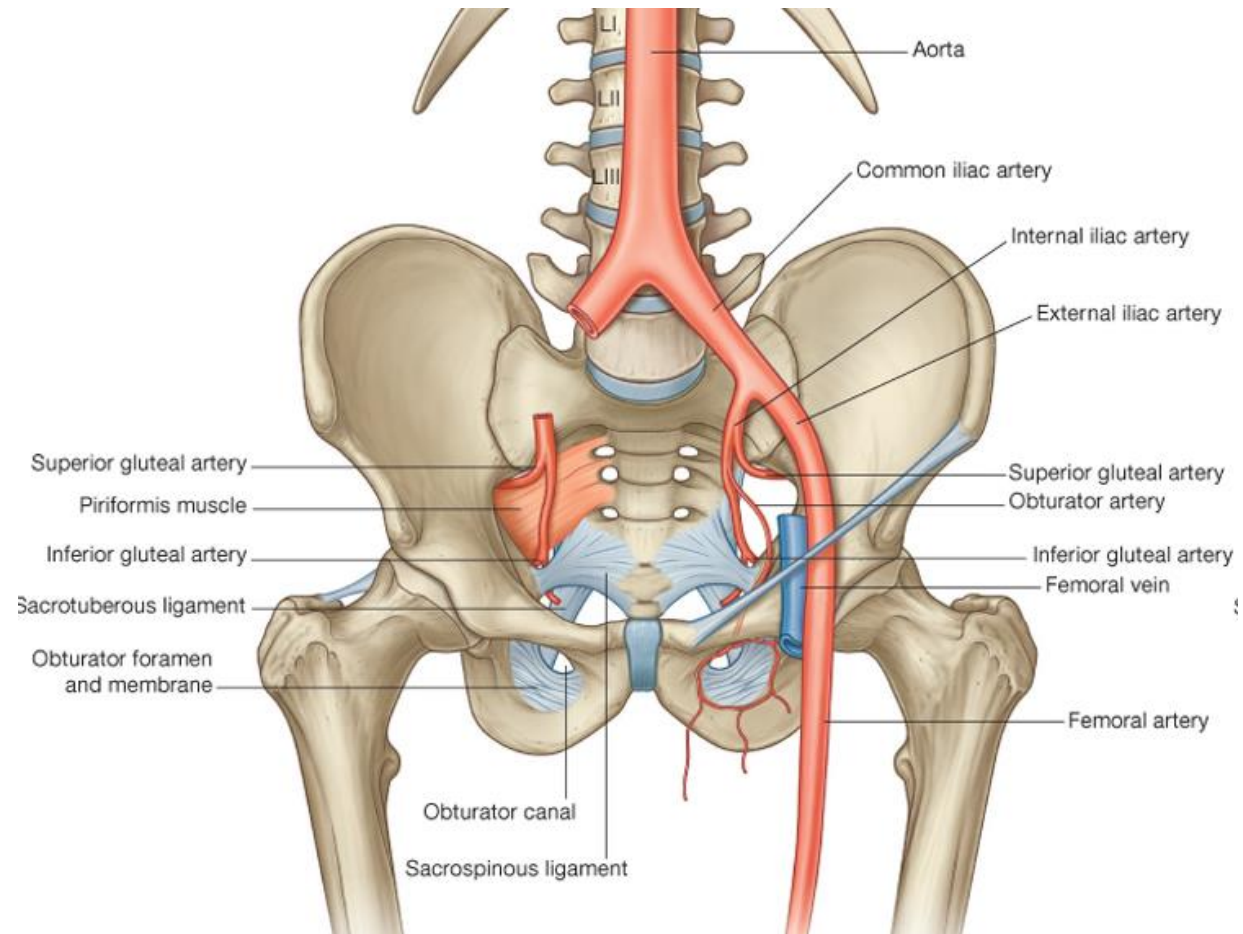
konečné:

- a. sacralis mediana
- aa. iliacae communes



Aa. iliacae communes

- L₄ bifurcatio aortae
- art. iliaca communis
(dělí se na a. iliaca int. a ext.)



A. iliaca interna

– zásobuje orgány a stěnu malé pánve

Větve parietální:

svalové větve pro hýžd'ové svalstvo

(a. glutea superior et inferior),

stěna malé pánve

(a. iliolumbalis, a. sacralis lateralis),

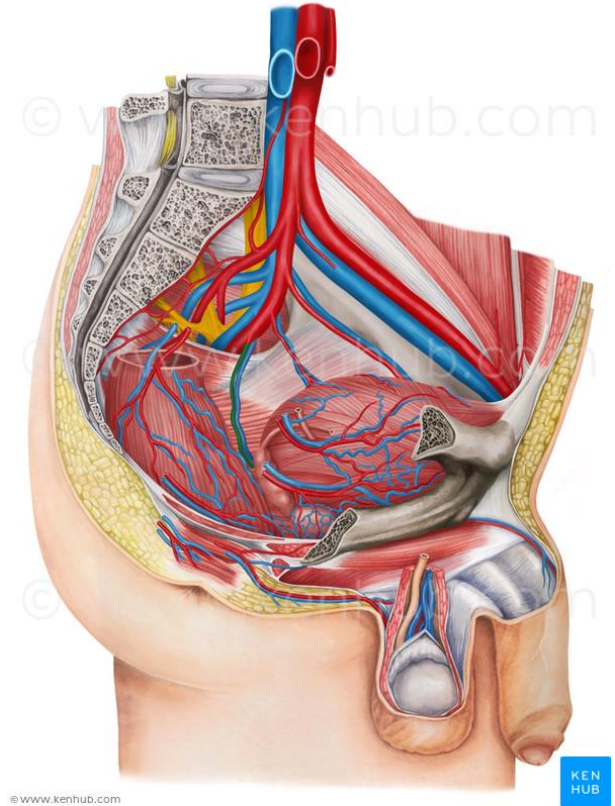
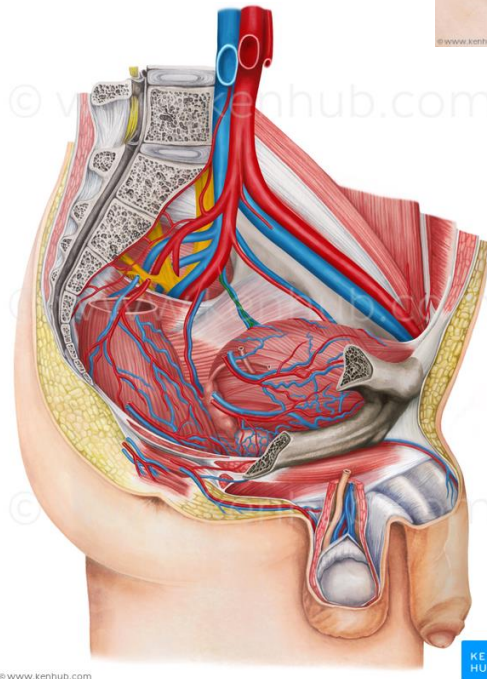
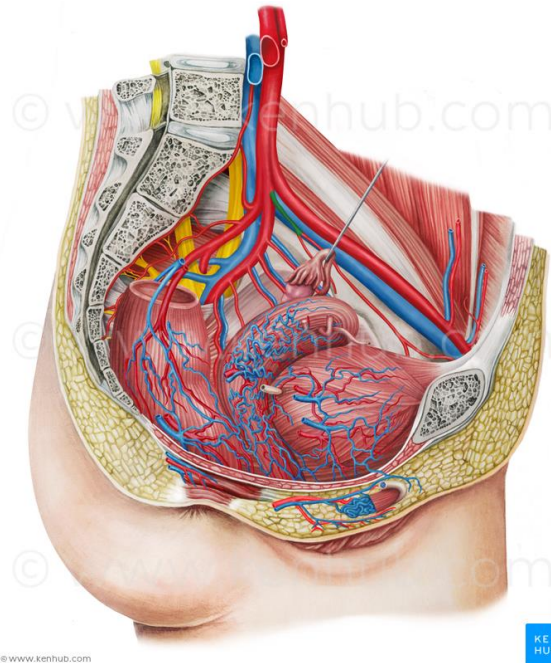
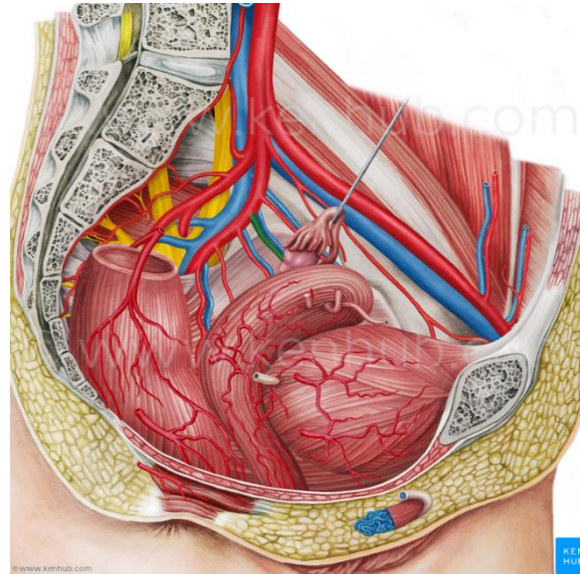
pro adduktory stehna (a. obturatoria),

pohl. orgány (a. pudenda interna)



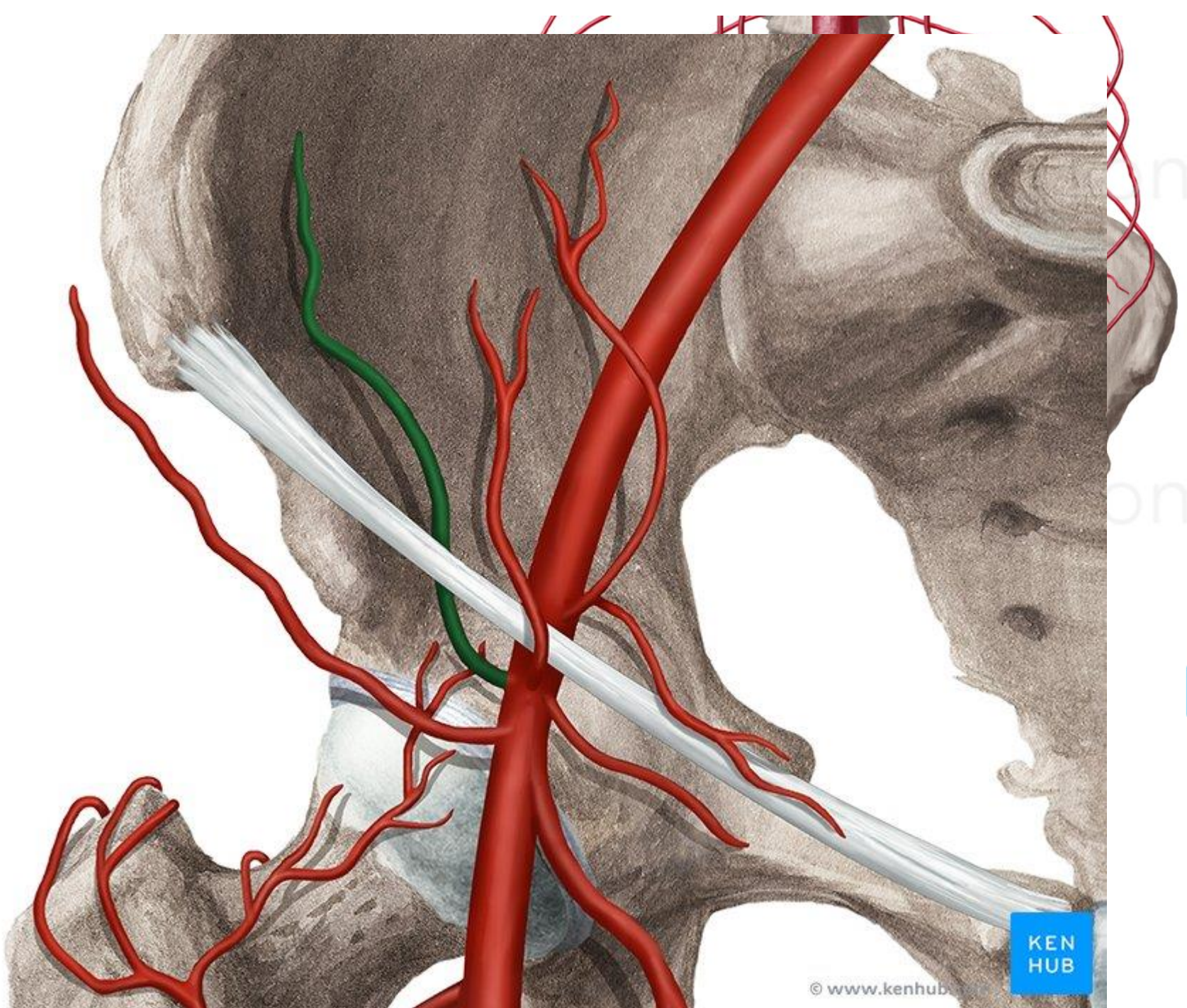
Větve viscerální:

- a. umbilicalis (obliteruje a mění se v lig. umbilicale lat.)
- k močovému měchýři (a. vesicalis inf.)
- k ductus deferens (resp. k děloze) – a. ductus deferentis, a. uterina
- ke konečníku (a. rectalis media)



A. ili

- siln
- a. epig
- břiřr
- pánv
- a. circ
- profu

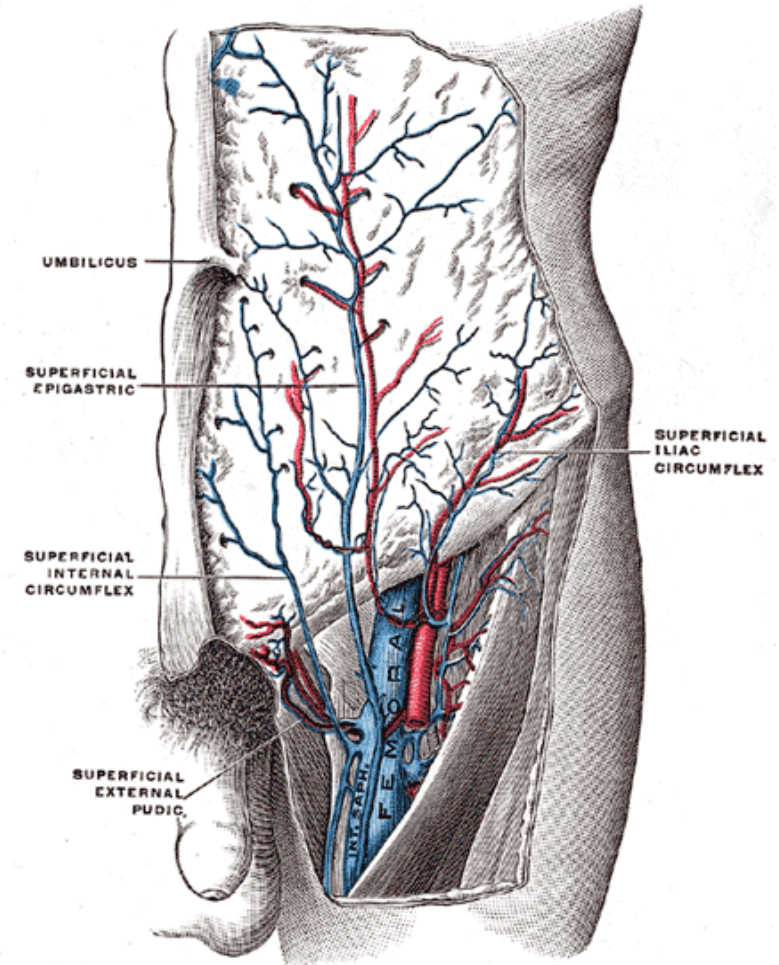
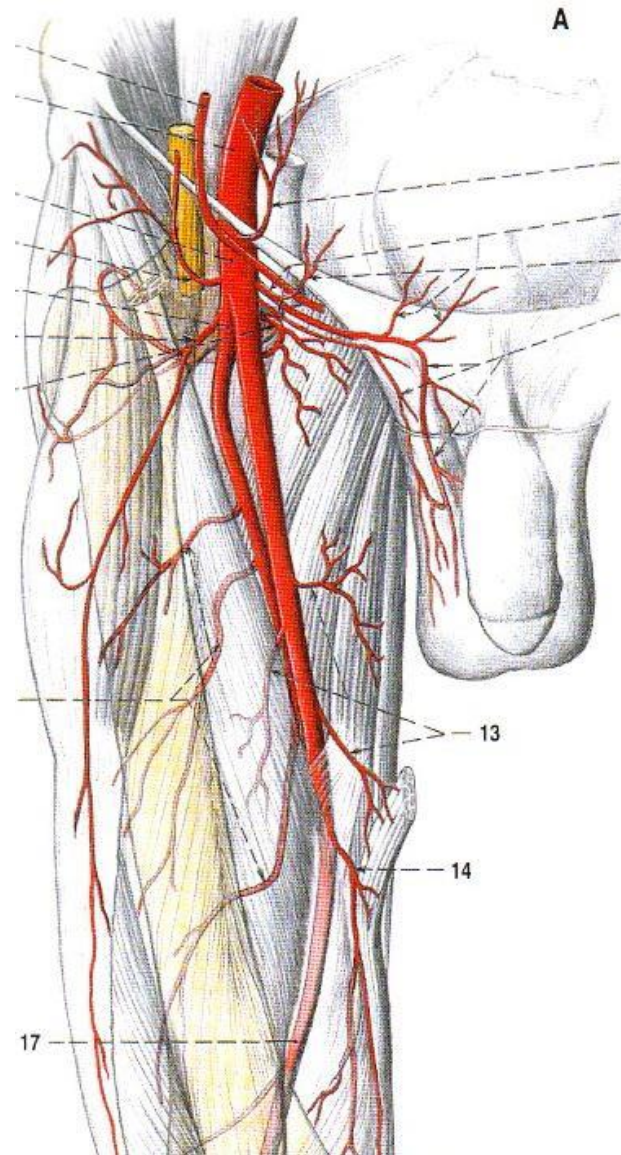


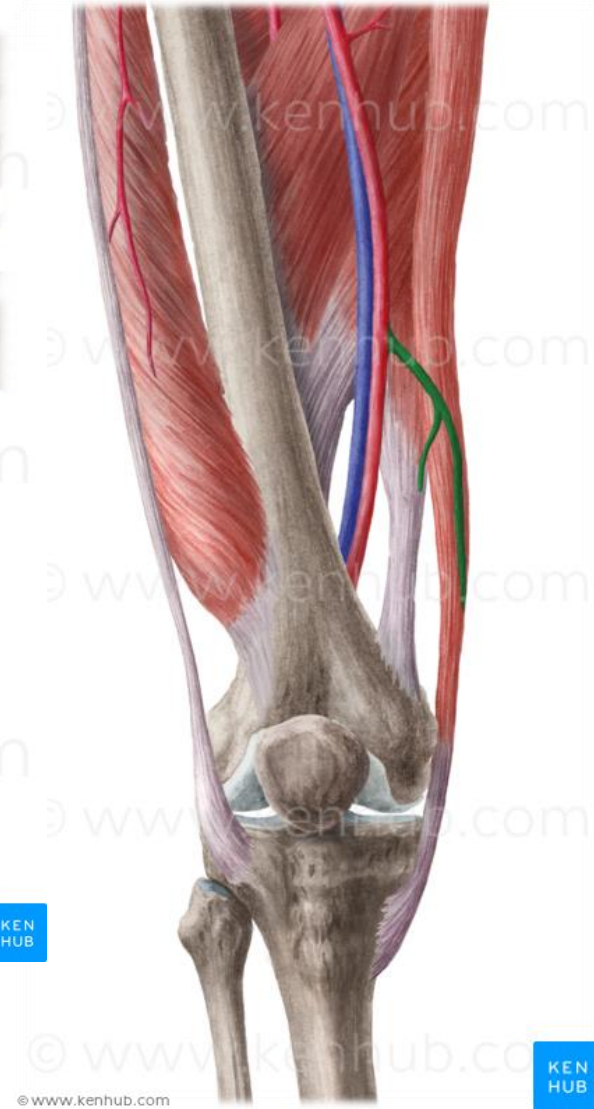
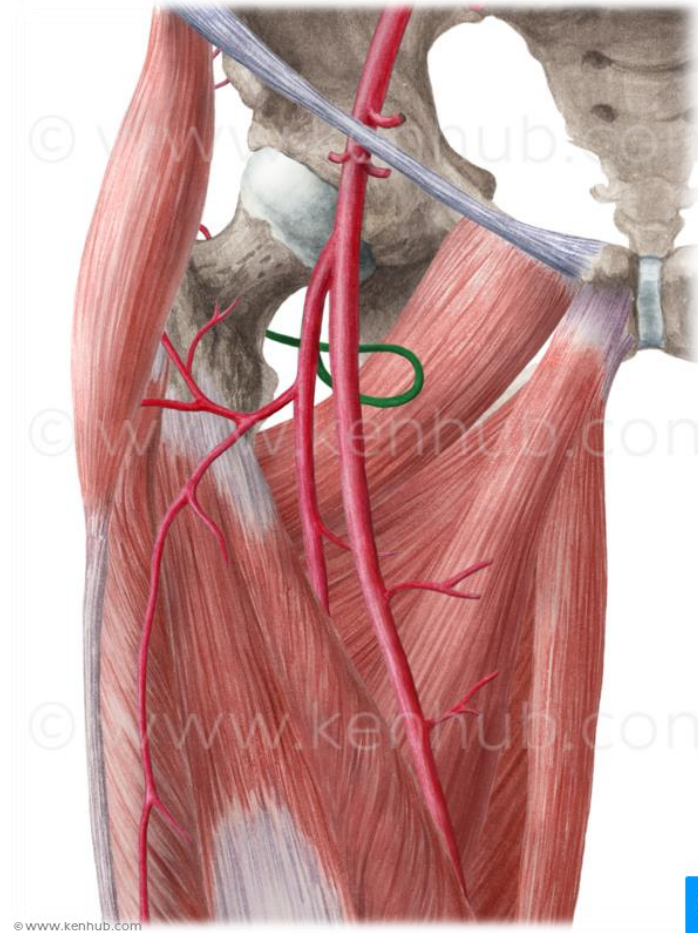
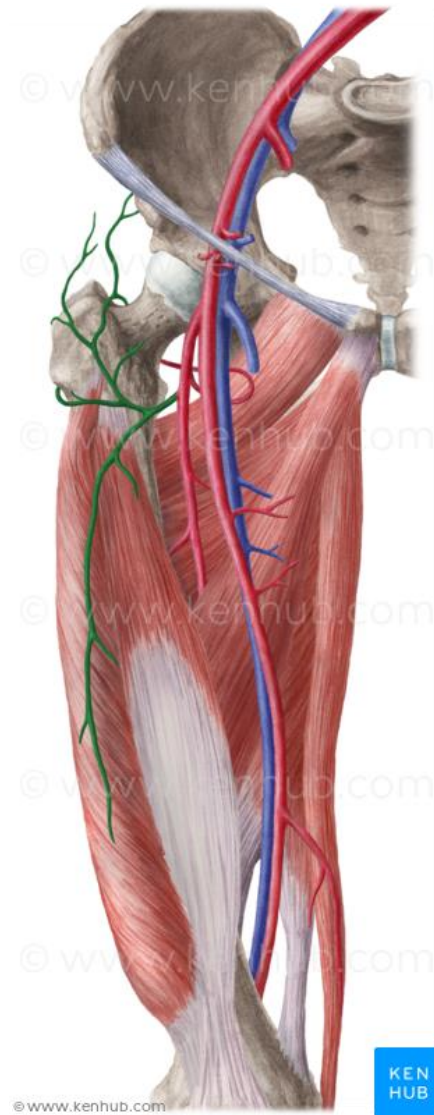
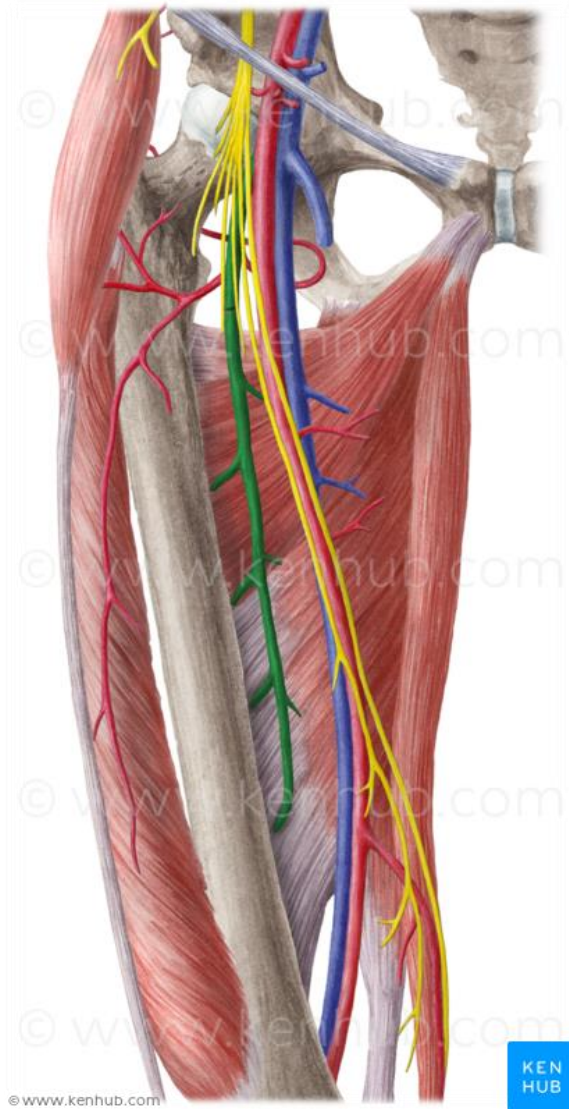
A. femoralis

- od lacuna vasorum po fossa poplitea, přes fossa iliopectinea a canalis adductorius

větve:

- 1) k zevním pohlavním orgánům a břišní stěně:
 - a. epigastrica superficialis,
 - a. circumflexa ilium superficialis,
 - aa. pudendae externae
- 2) **a. profunda femoris**: hlavní tepna pro svaly stehna (a. circumflexa femoris med. a lat., aa. perforantes)
- 3) svalové větve (svaly stehna)
- 4) **a. genus descendens**: do rete articulare genus (r. saphenus)



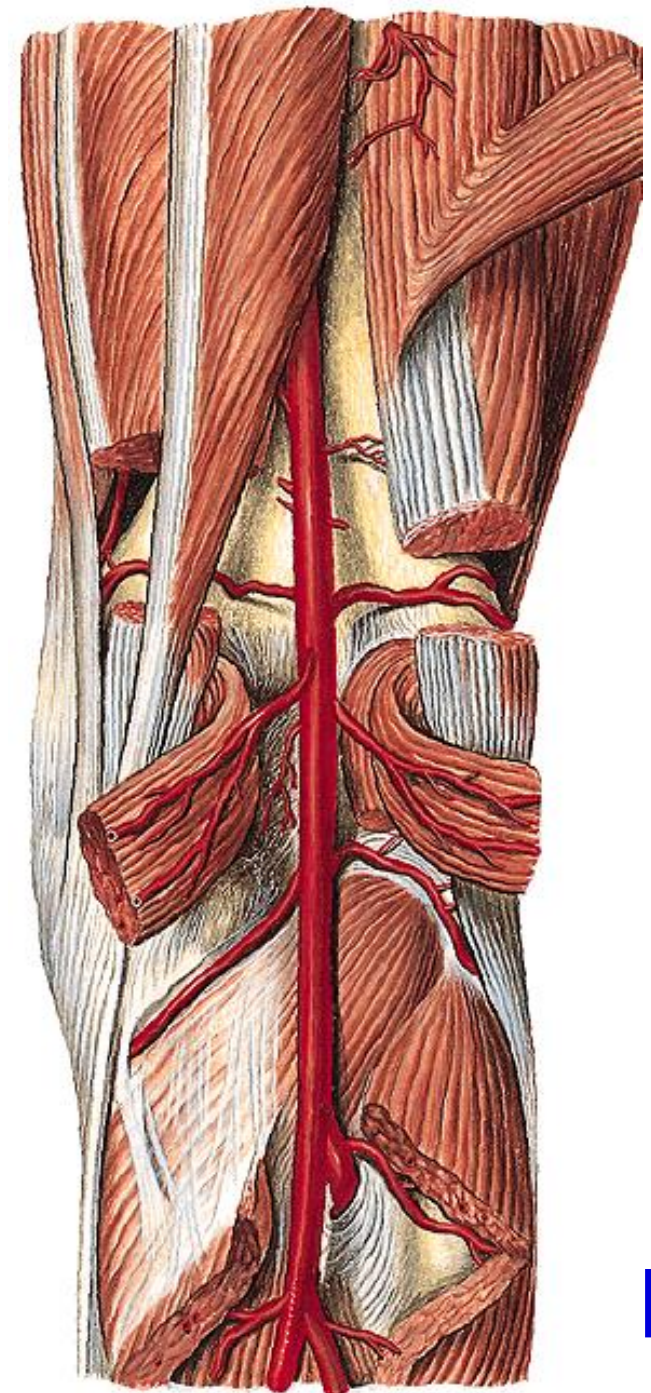


A. poplitea

- od hiatus tendineus k distálnímu okraji m. popliteus
- svaly zákolenní jamky a kolenní kloub

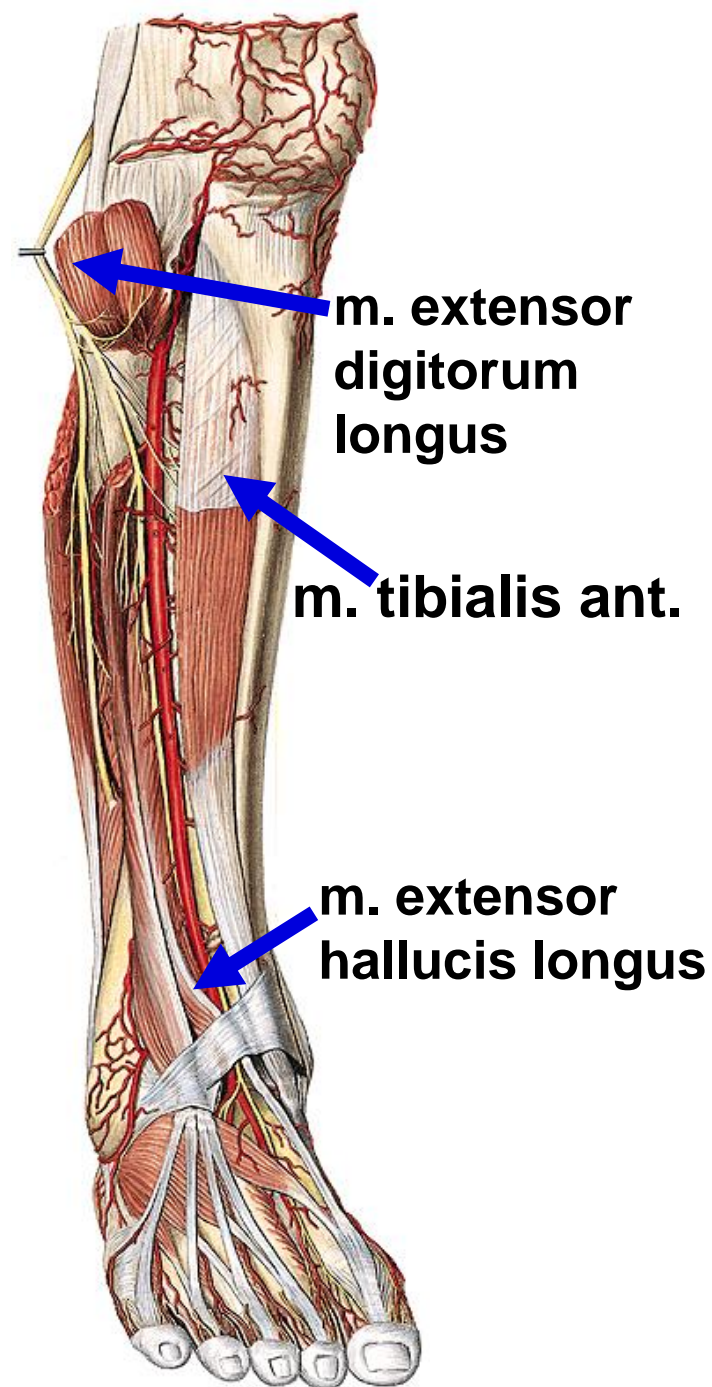
Větve:

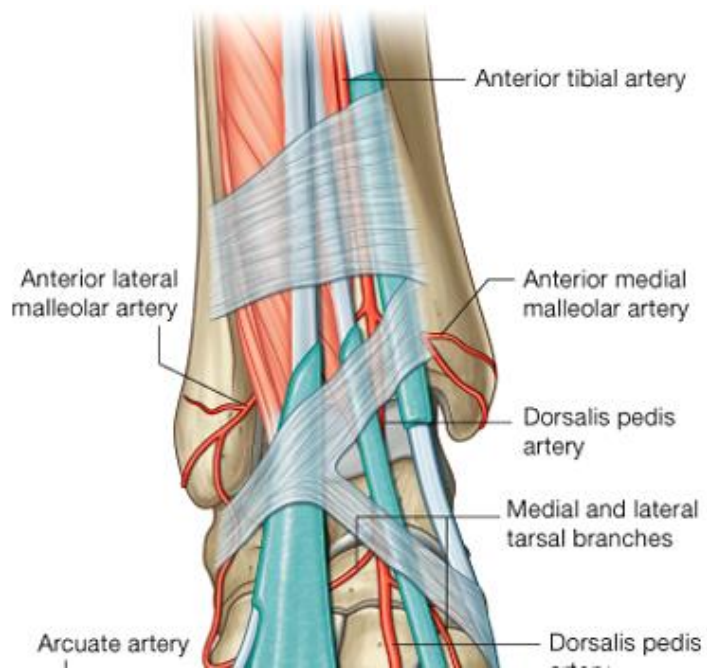
- 1) aa. surales (pro hlavy m. gastrocnemius)
- 2) aa. genus - do tepenné sítě kolem kolenního kloubu
- 3) konečné větve:
 - a. tibialis anterior
 - a. tibialis posterior



A. tibialis anterior

- nad membrana interossea cruris (nebo proráží skrz)
- proximálně mezi m. tibialis ant. a m. extensor digitorum longus
- distálně mezi m. tibialis ant. a m. extensor hallucis longus – pod retinaculum extensorum
- od prostupu pod retinaculum extensorum – **a. dorsalis pedis**

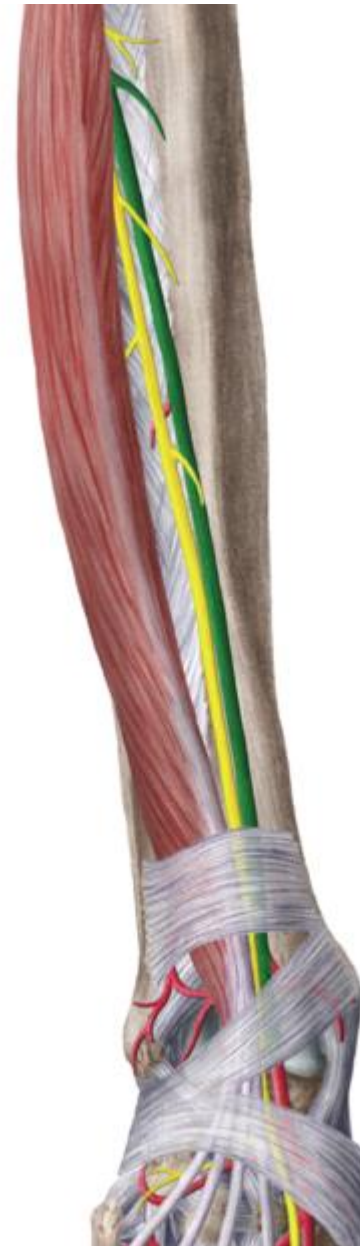




zásobuje kolenní kloub, přední stranu bérce, hřbet nohy a prstů

větve:

- 1) do tepenné sítě kolenního kloubu**
- 2) svalové**
- 3) do tepenné sítě kolem obou kotníků**
- 4) a. dorsalis pedis**



Větve z a. dorsalis pedis:

a. tarsalis lateralis

aa. tarsales mediales

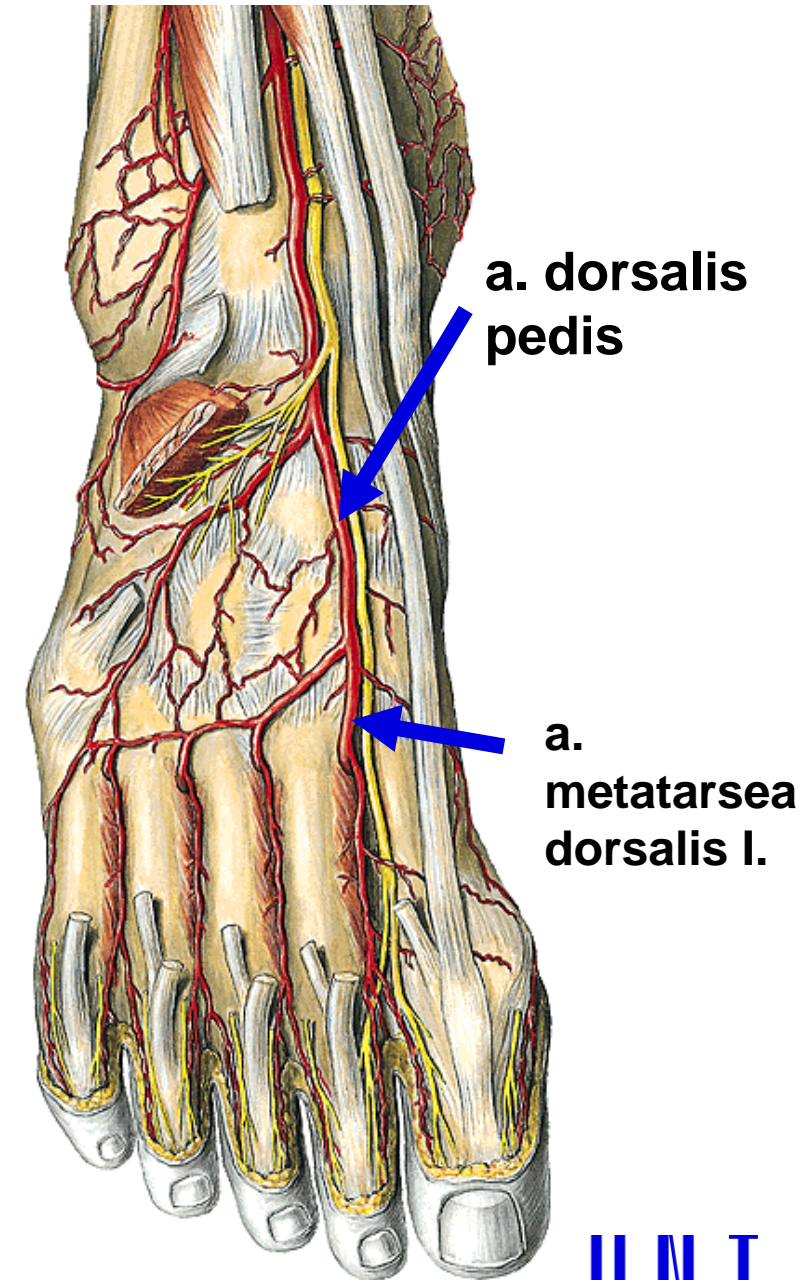
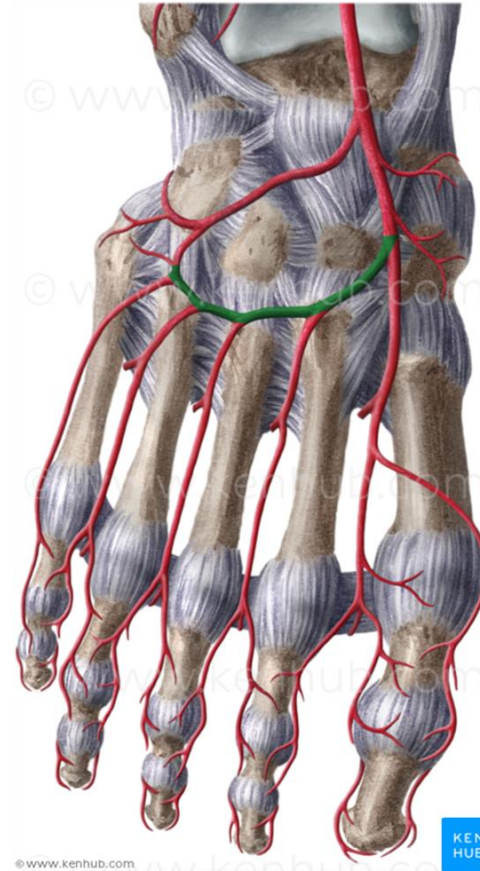
a. arcuata

•aa. metatarsae dorsales

•aa. digitales dorsales

a. metatarsa dorsalis I.

r. plantaris profundus (do planta pedis-
arcus plantaris)



A. tibialis posterior

pod arcus tendineus m. solei, leží na hlubokých flexorech bérce, za mediálním kotníkem jde do planta pedis

canalis malleolaris (útvary za mediálním kotníkem)

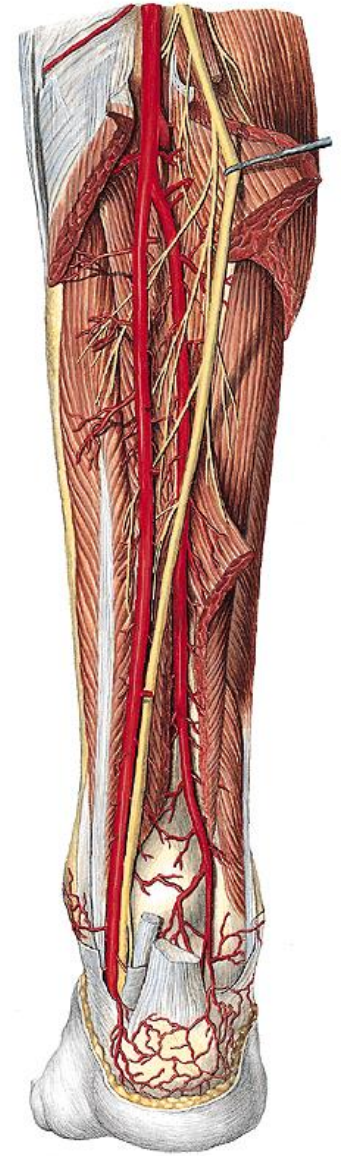
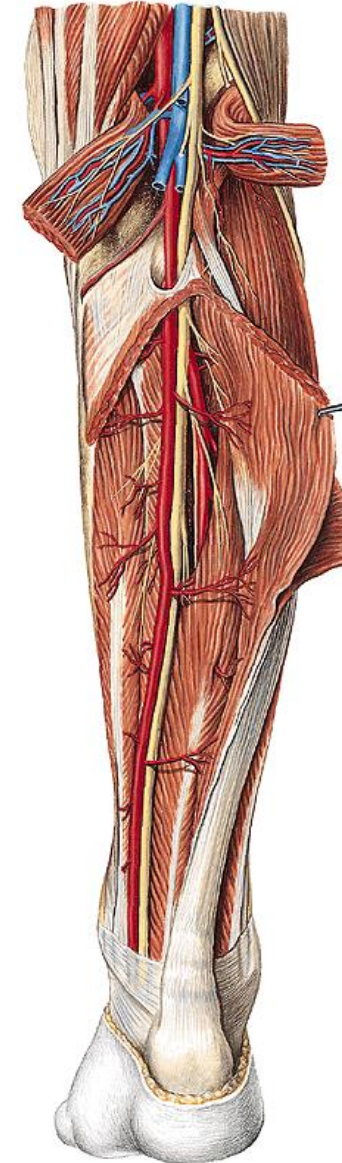
m. tibialis posterior

m. flexor digitorum longus

a. et vv. tibiales posteriores

n. tibialis

m. flexor hallucis longus



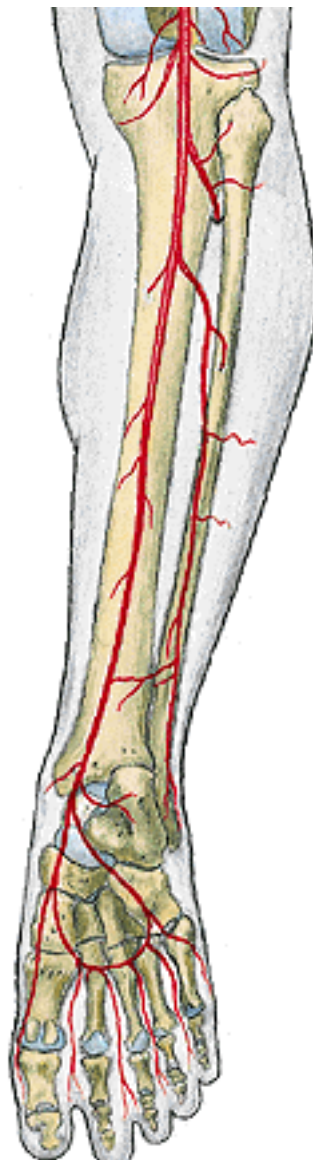
větve:

1) do tepenné sítě kolenního kloubu

2) **a. fibularis** - vyživuje fibulu a okolní svaly

4) do tepenné sítě mediálního kotníku

5) do tepenné sítě kolem paty



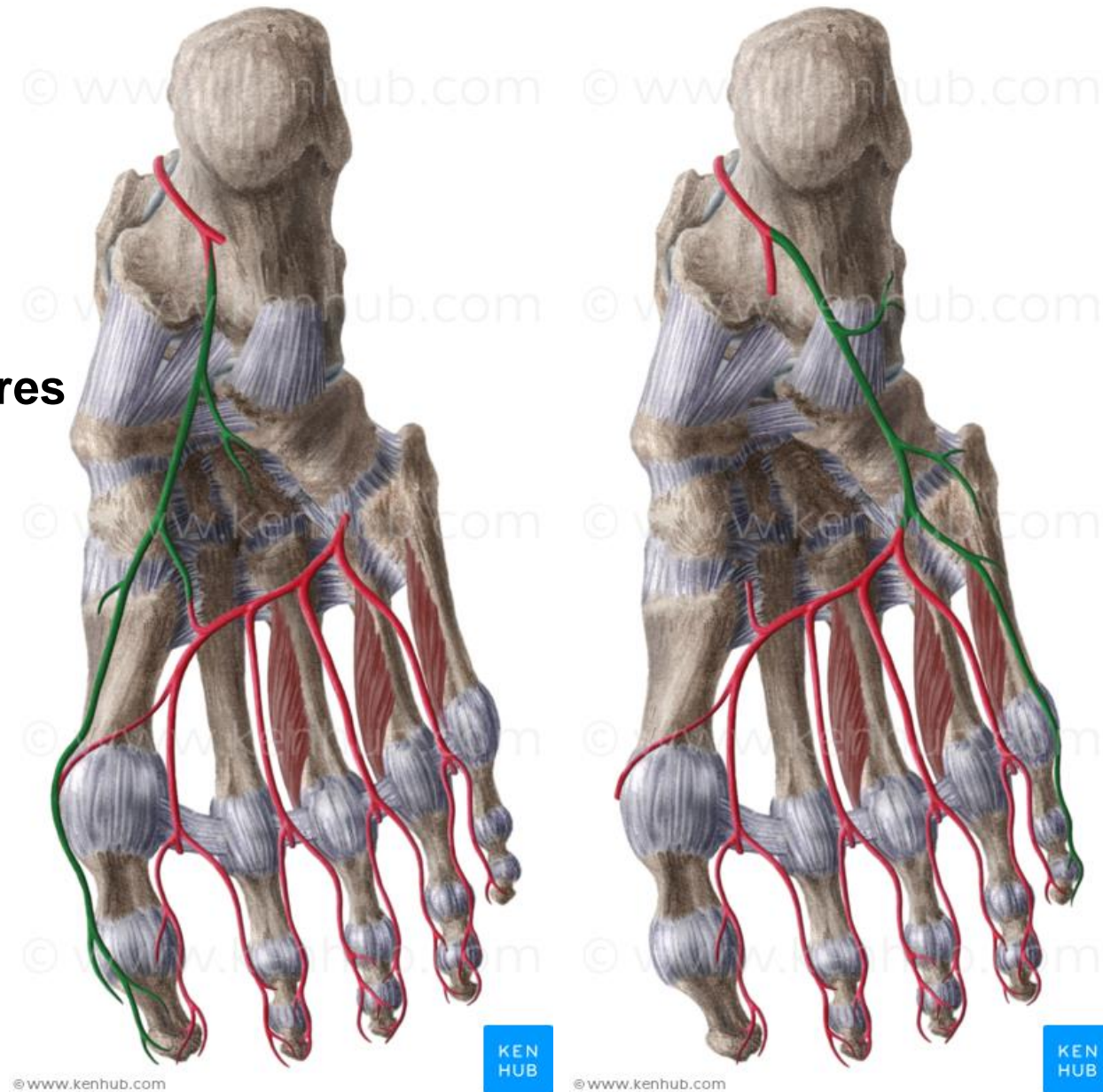
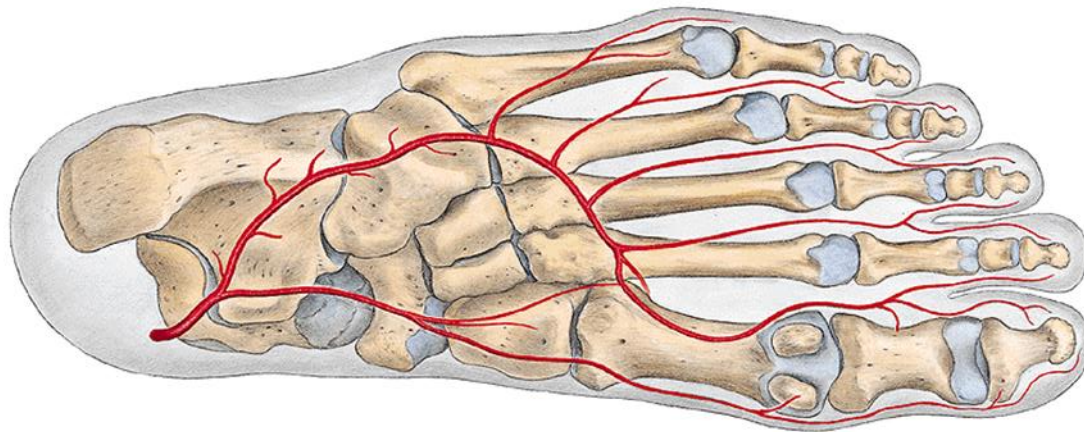
konečné větve:

a. plantaris medialis

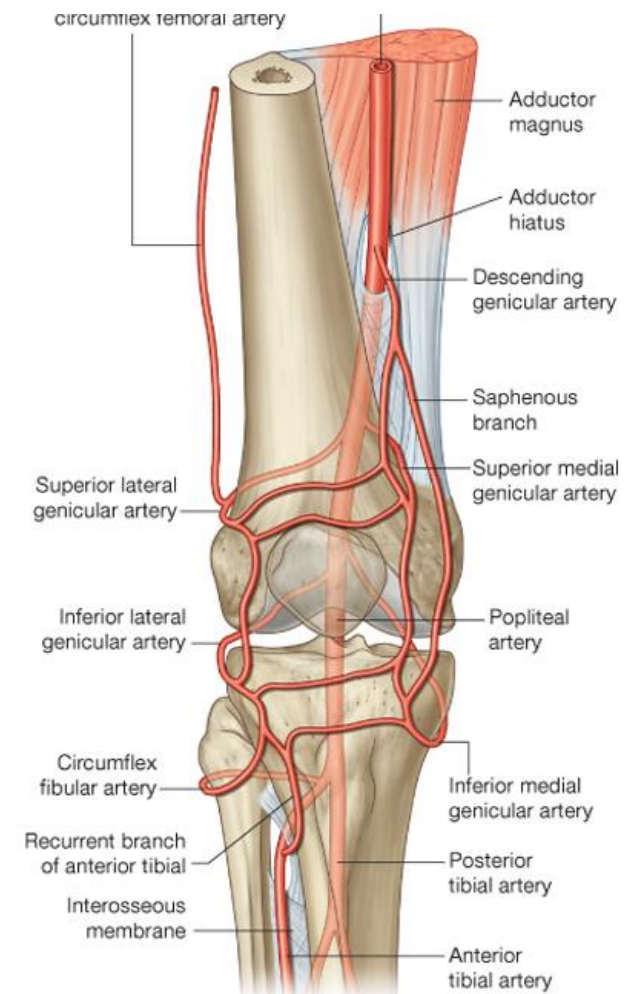
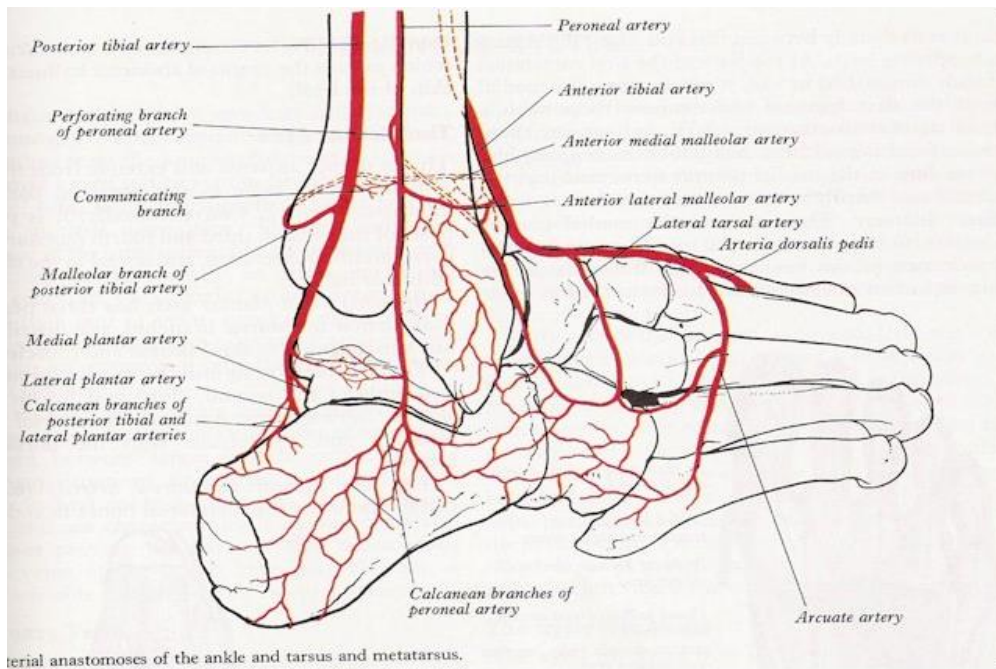
a. plantaris lateralis

arcus plantaris – aa. metatarsae plantares

aa. digitales plantares)



- **RETE ARTICULARE GENUS (rete patellae)**
- **RETE MALLEOLARE MEDIALE**
- **RETE MALLEOLARE LATERALE**
- **RETE CALCANEUM**
- **RETE DORSALE PEDIS**



Přednáška pokračuje druhou částí, která bude věnována přehledu žil a lymfatickému systému

Obrázky:

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Netter: Interactive Atlas of Human Anatomy.

Naňka, Elišková: Přehled anatomie. Galén, Praha 2009.

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