

UNIVERSITAS CAROLINA PRAGENSIS

Univerzita Karlova v Praze – 1. lékařská fakulta



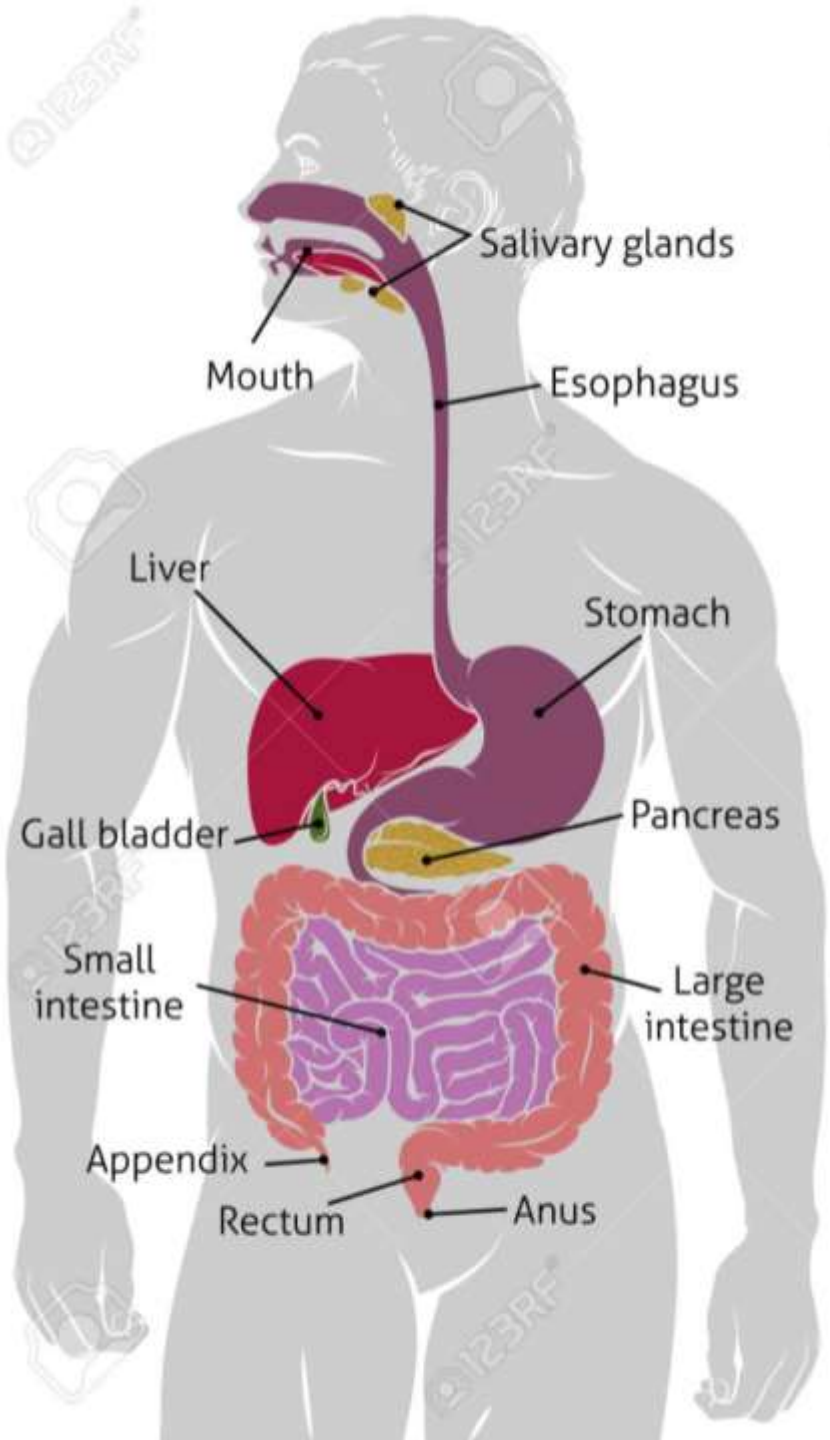
Trávicí systém 1

Vývoj. Dutina ústní. Zuby. Jazyk.
Slinné žlázy. Patro. Hltan.

Anatomický ústav

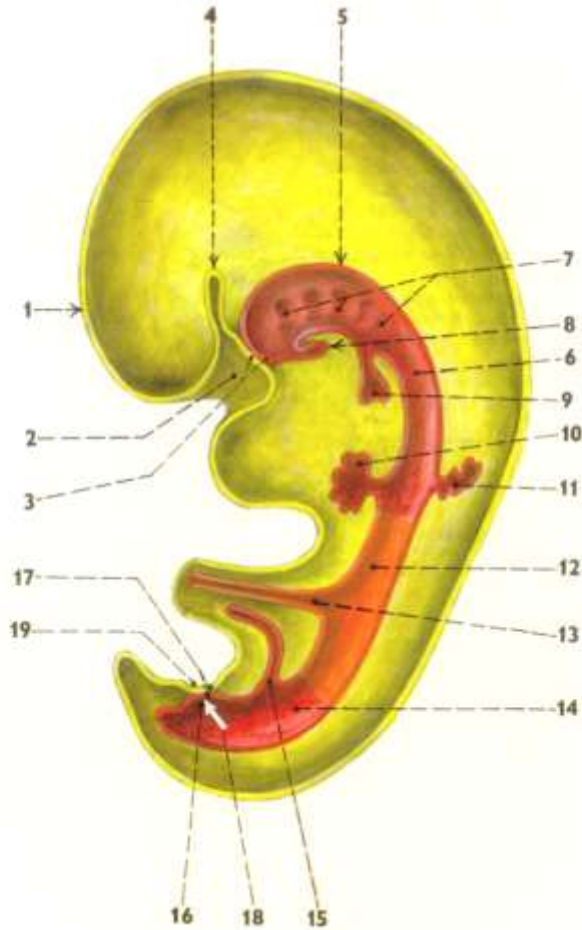
Autor: Petr Valášek

Obor: Všeobecné a zubní lékařství – Anatomie 1



Saliva	1000
Stomach	1500
Brunners Glands (duodenum)	200
Pancreas	1000-1500
Bile	1000
Small Intestine	1800
Large Intestine	200
<u>Total</u>	<u>7000ml/day</u>

Vývoj trávicího systému



Čihák, R.: Anatomie 2, Avicenum, Praha, 1988

Vývoj trávicího systému

FOREGUT jícen, žaludek (játra, pancreas, slezina)
proximální duodenum
truncus coeliacus

n. vagus

MIDGUT distální duodenum, jejunum, ileum, colon caec. asc. trans.
a. mesenterica superior

n. vagus

Cannon-Böhmův bod

Flexura lienalis

Anastomosis magna Halleri

HINDGUT colon descendens, sigmoideum, rectum
(močový měchýř, urachus)
a. mesenterica inferior

sacral parasympathetic

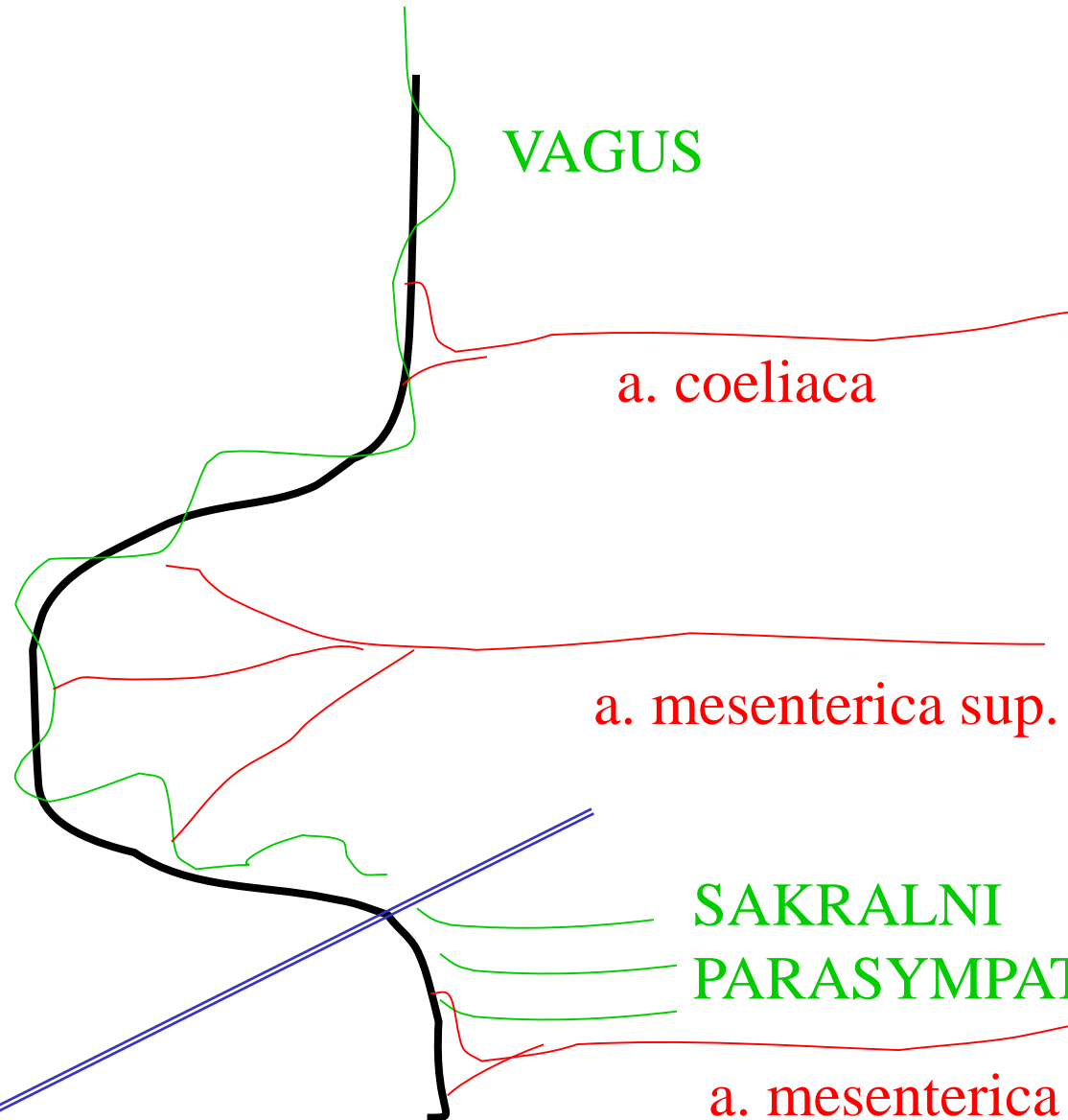
VAGUS

a. coeliaca

a. mesenterica sup.

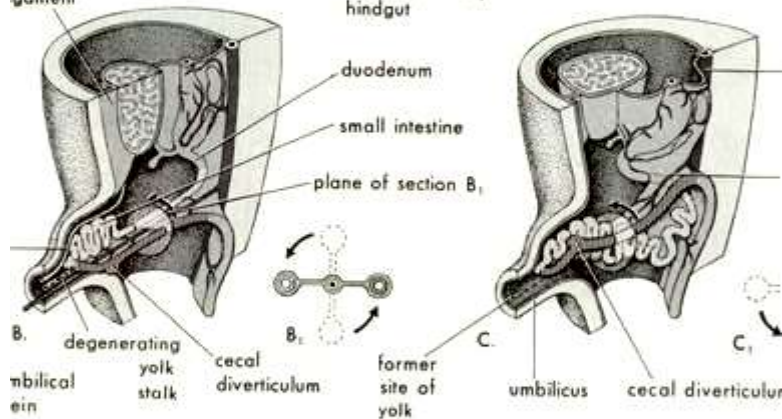
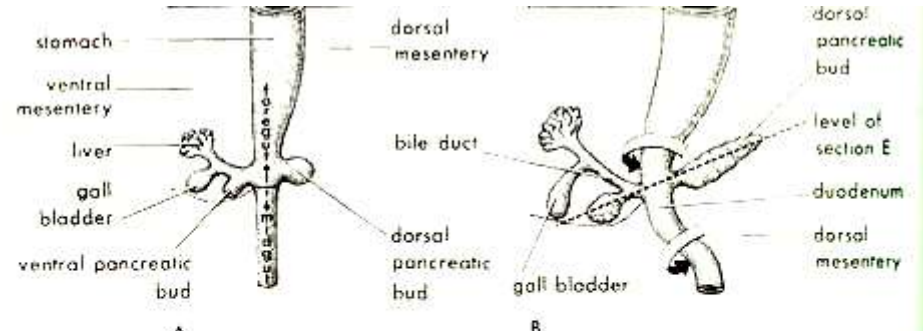
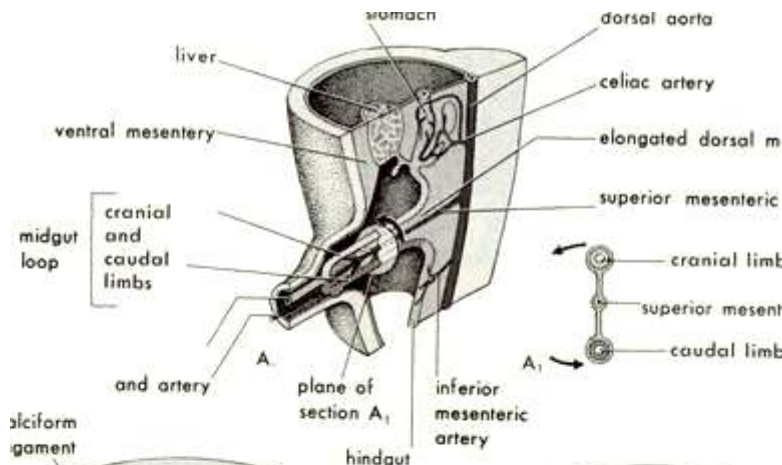
SAKRALNI
PARASYMPATICUS

a. mesenterica inf.

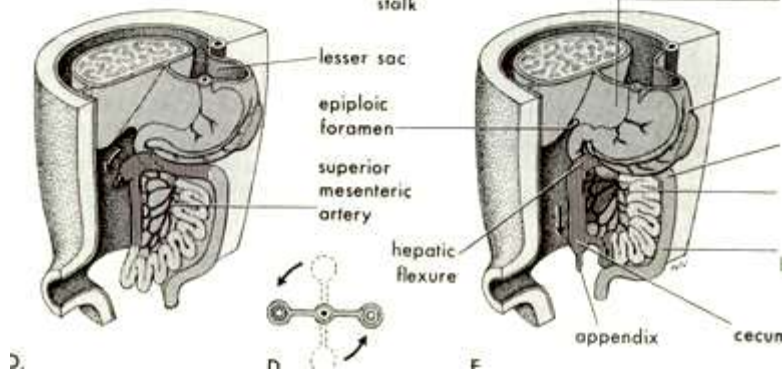


Cannon-Böhm

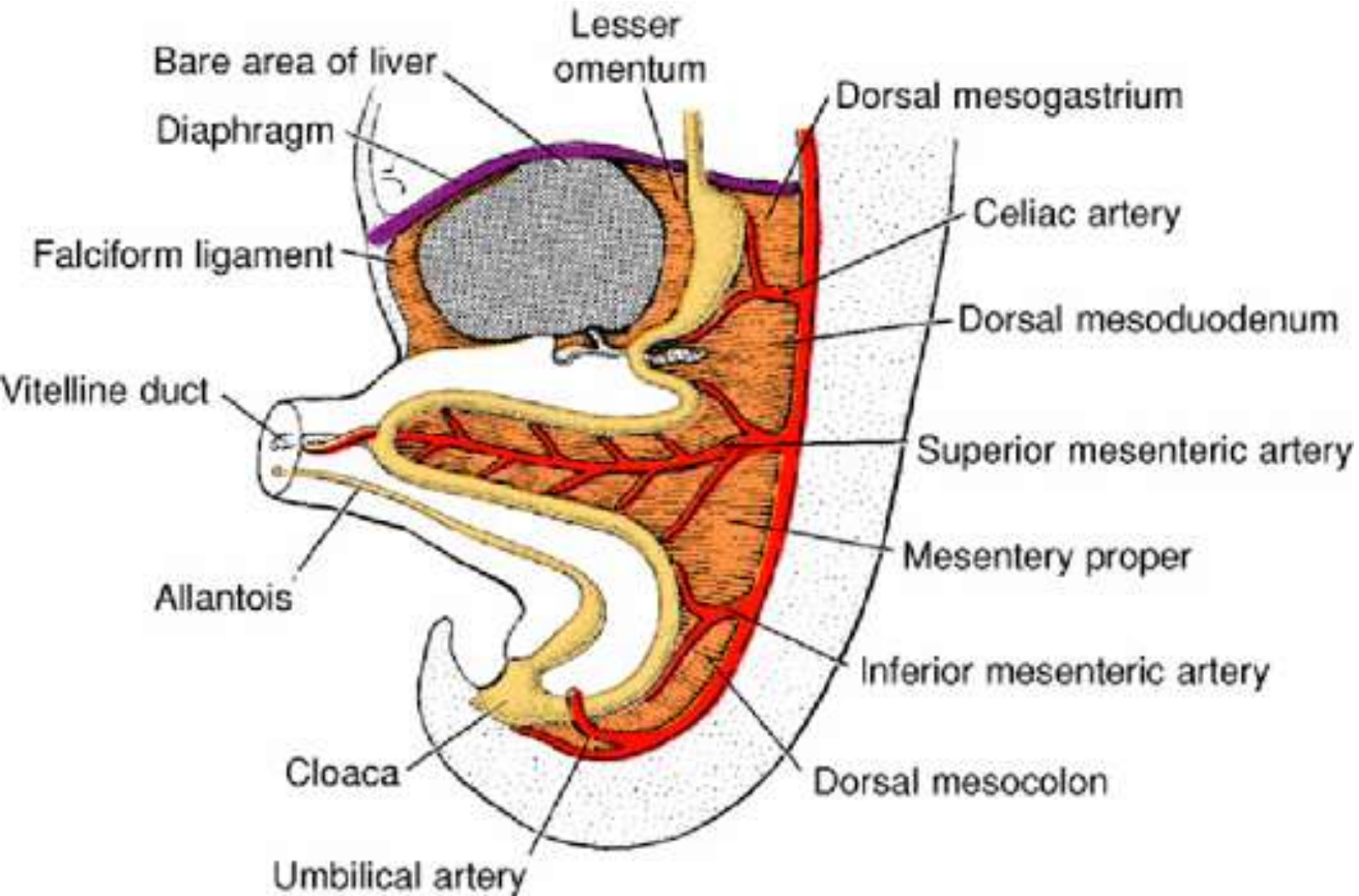
Anastomosis magna Halleri



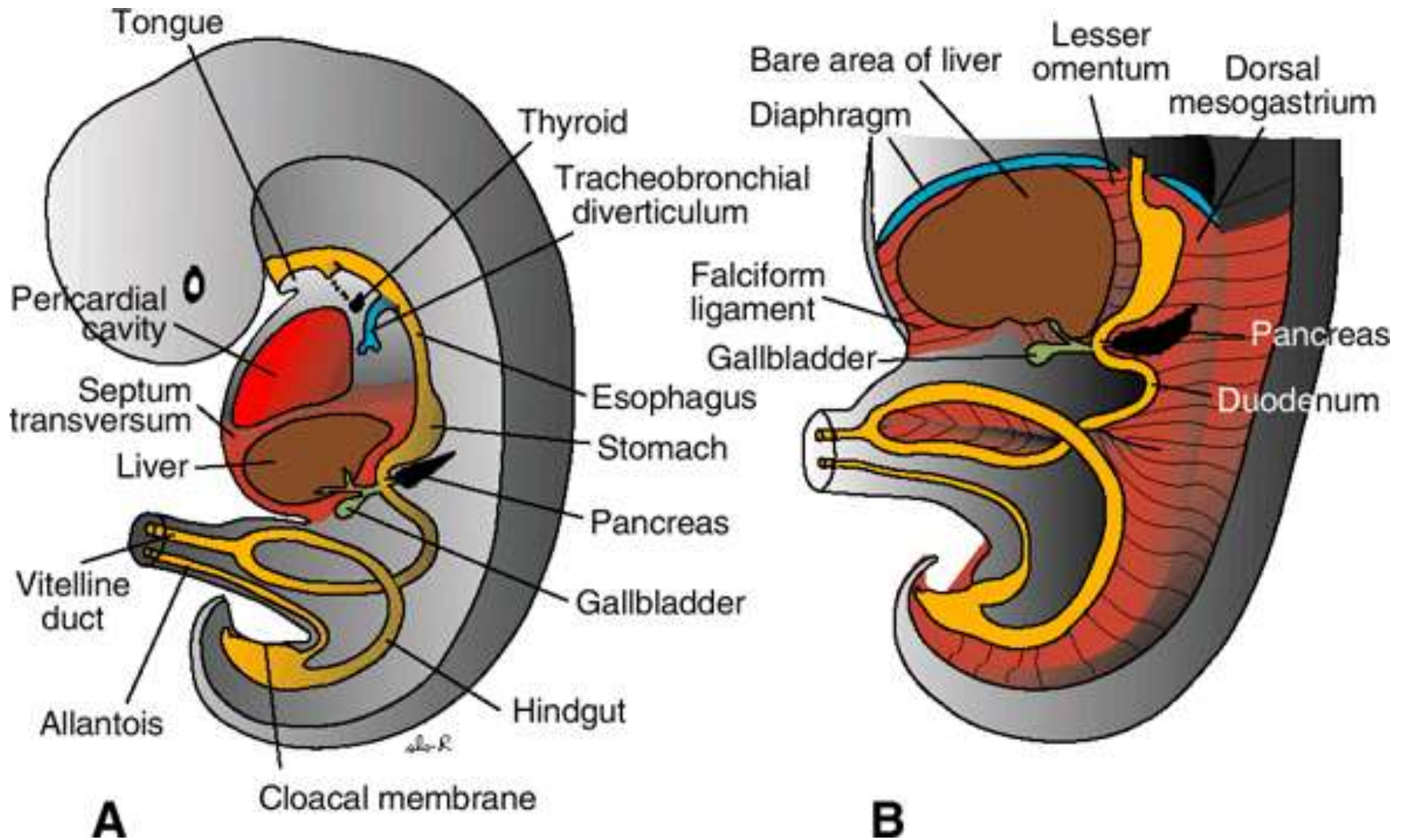
Vývoj trávicího systému:
 Růst
 Rotace 1. žaludek 2. tlusté střevo 3. omentum maius
 Srůsty



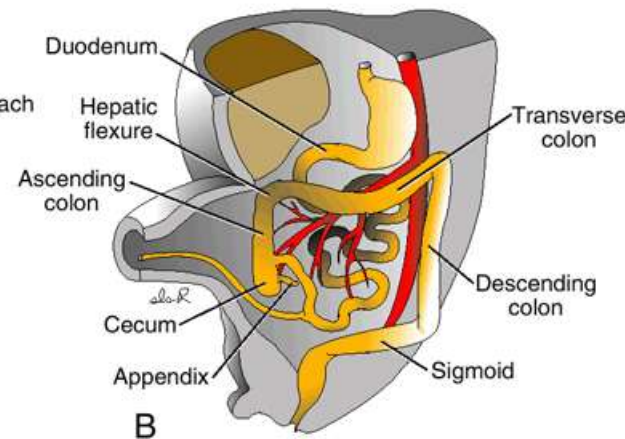
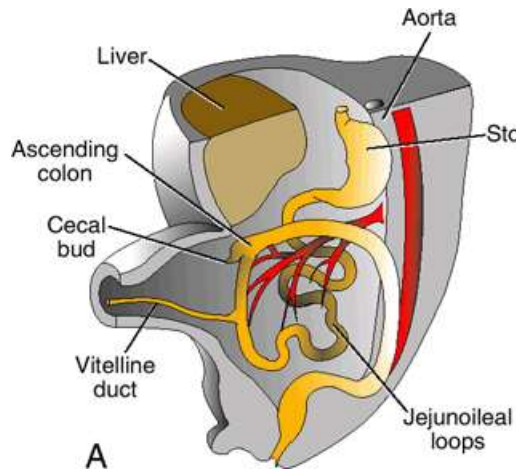
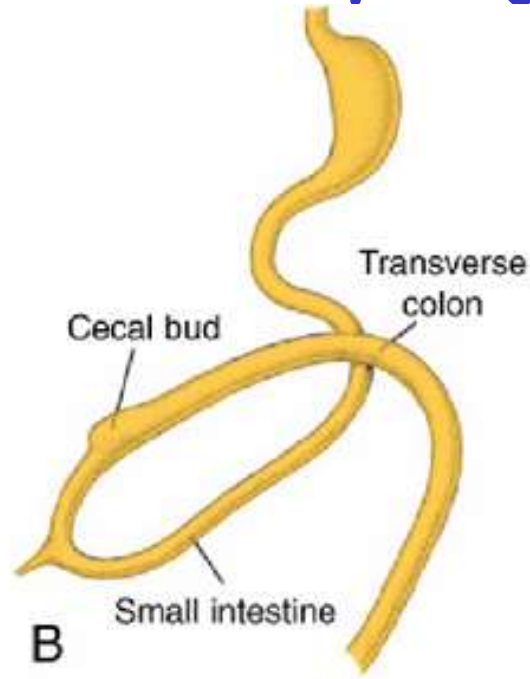
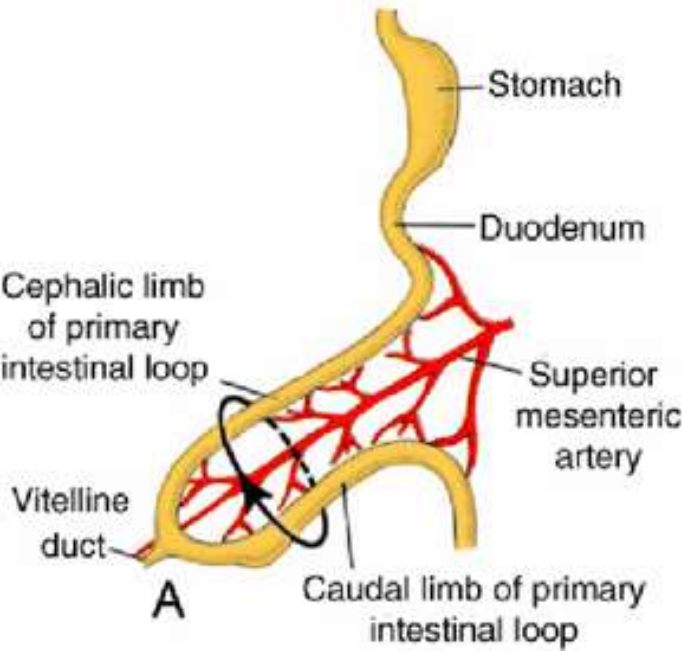
Vývoj



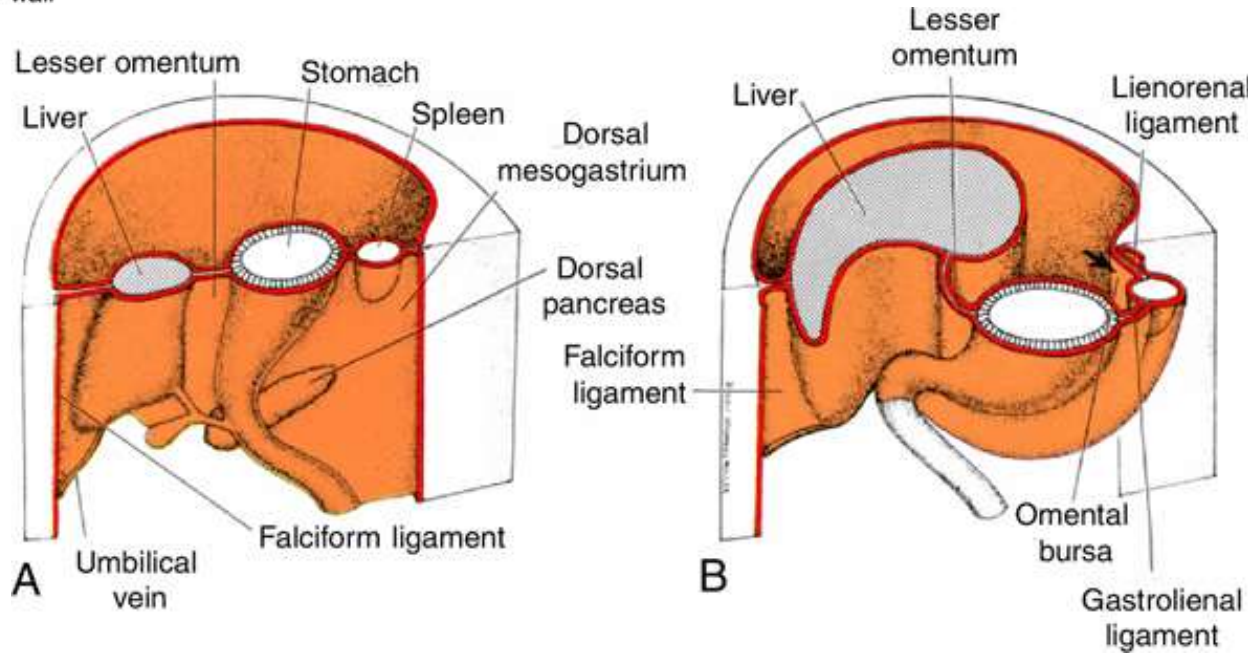
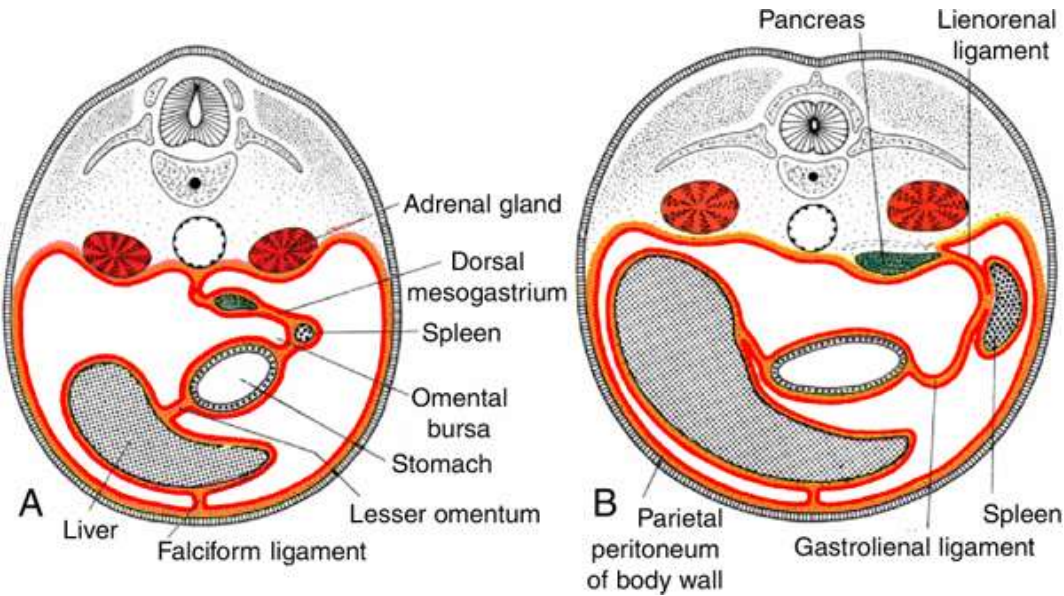
Vývoj

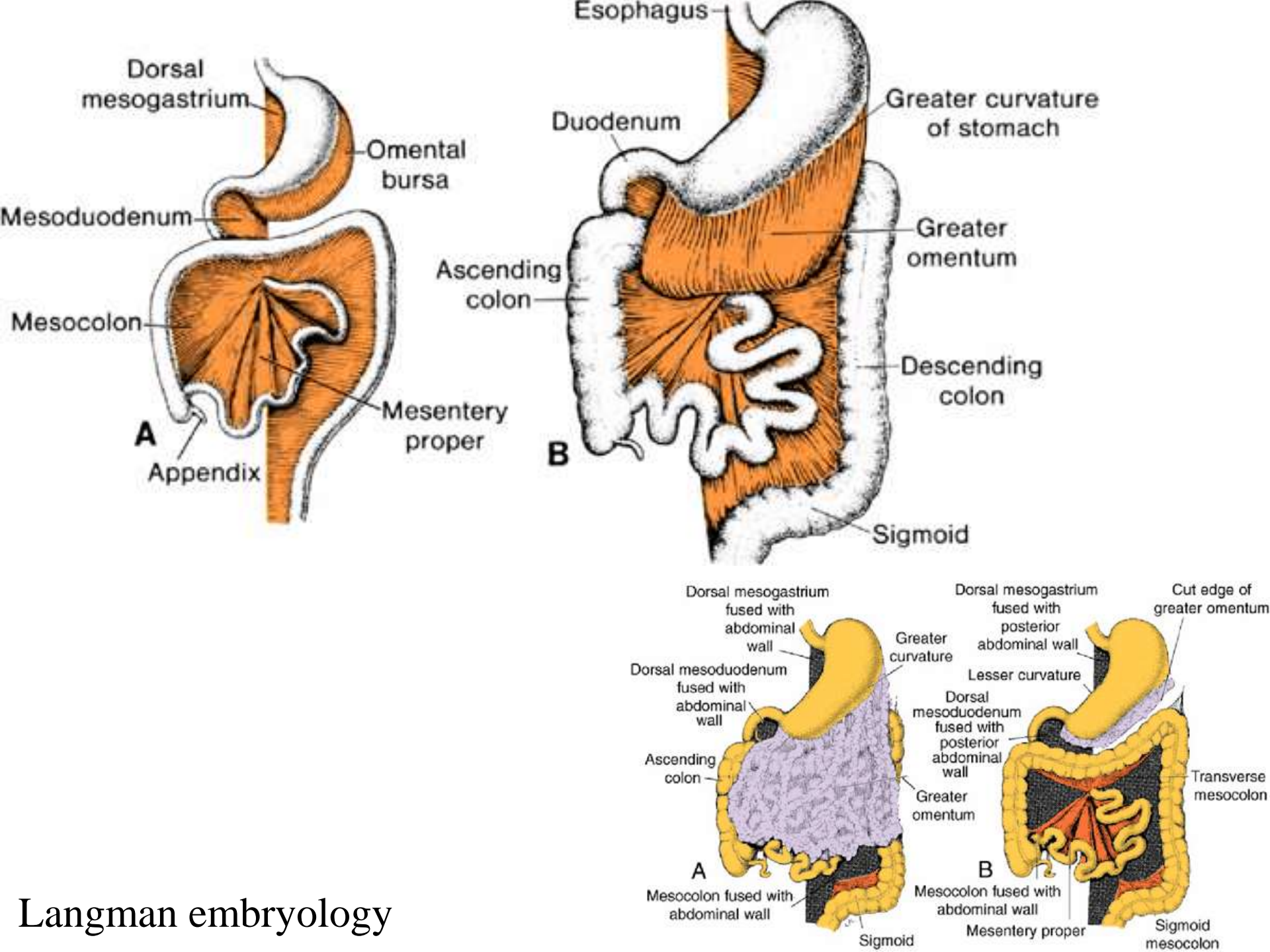


Vývoj

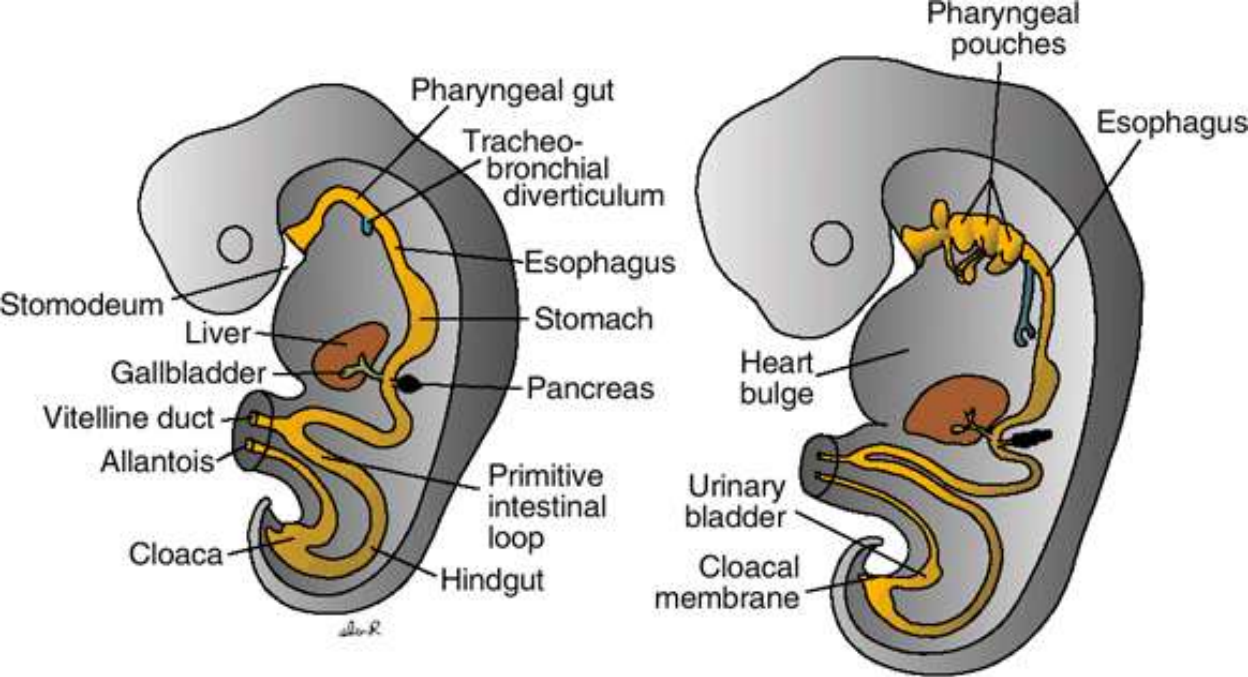


Vývoj



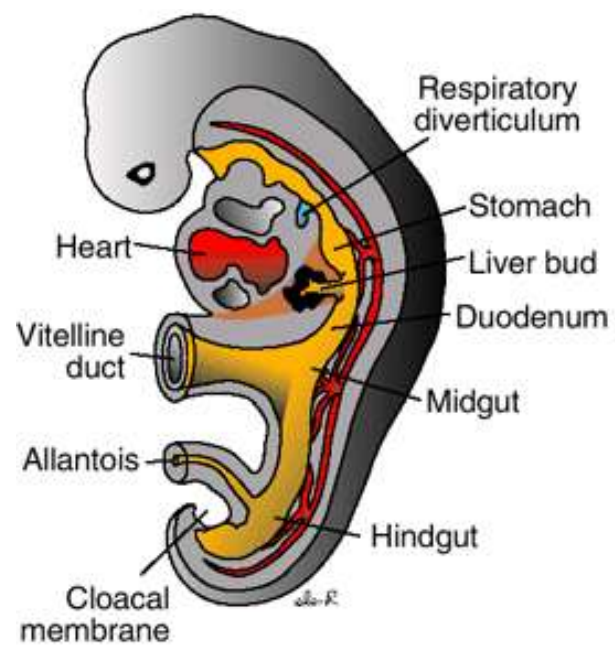


Langman embryology

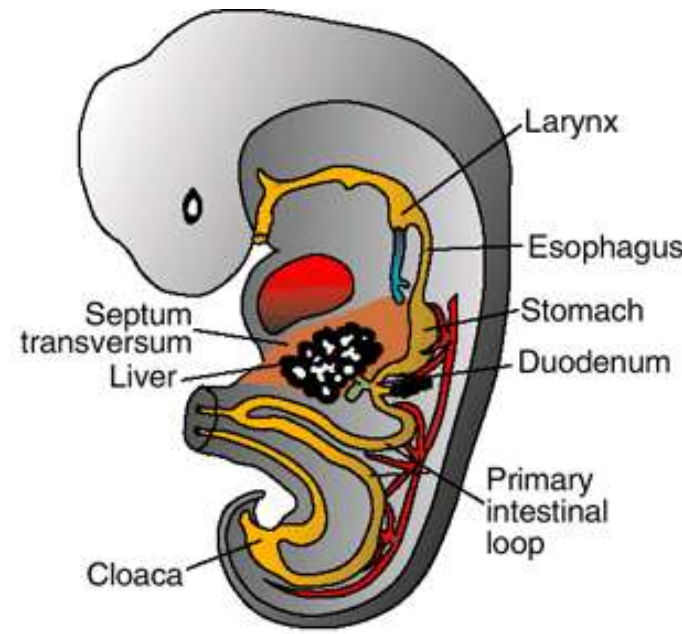


A

B



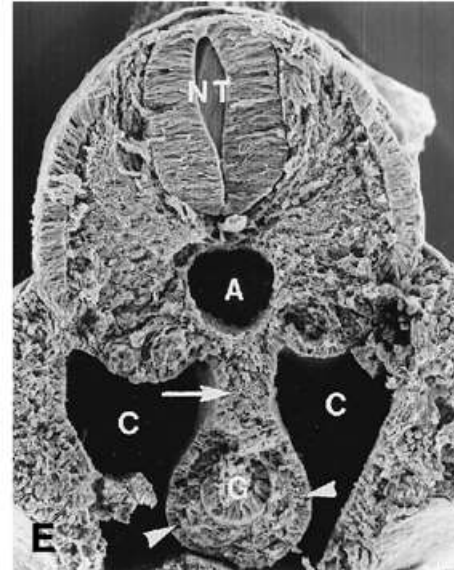
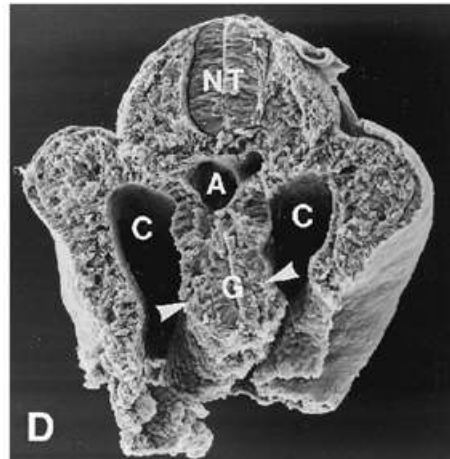
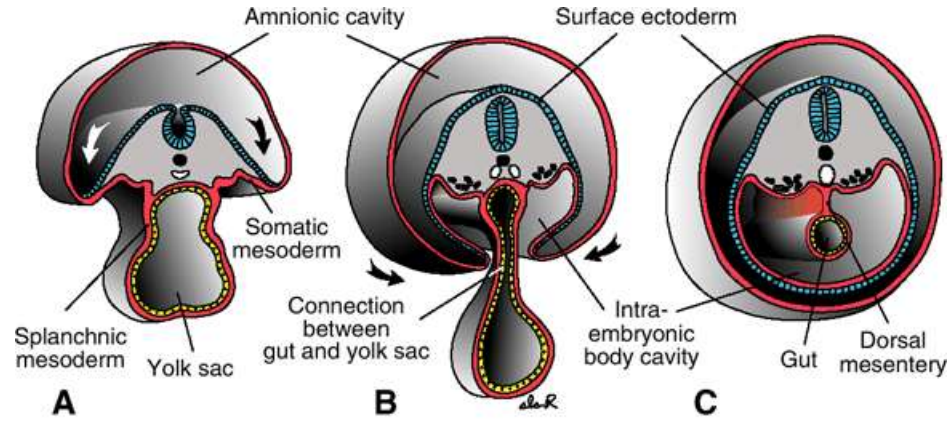
A



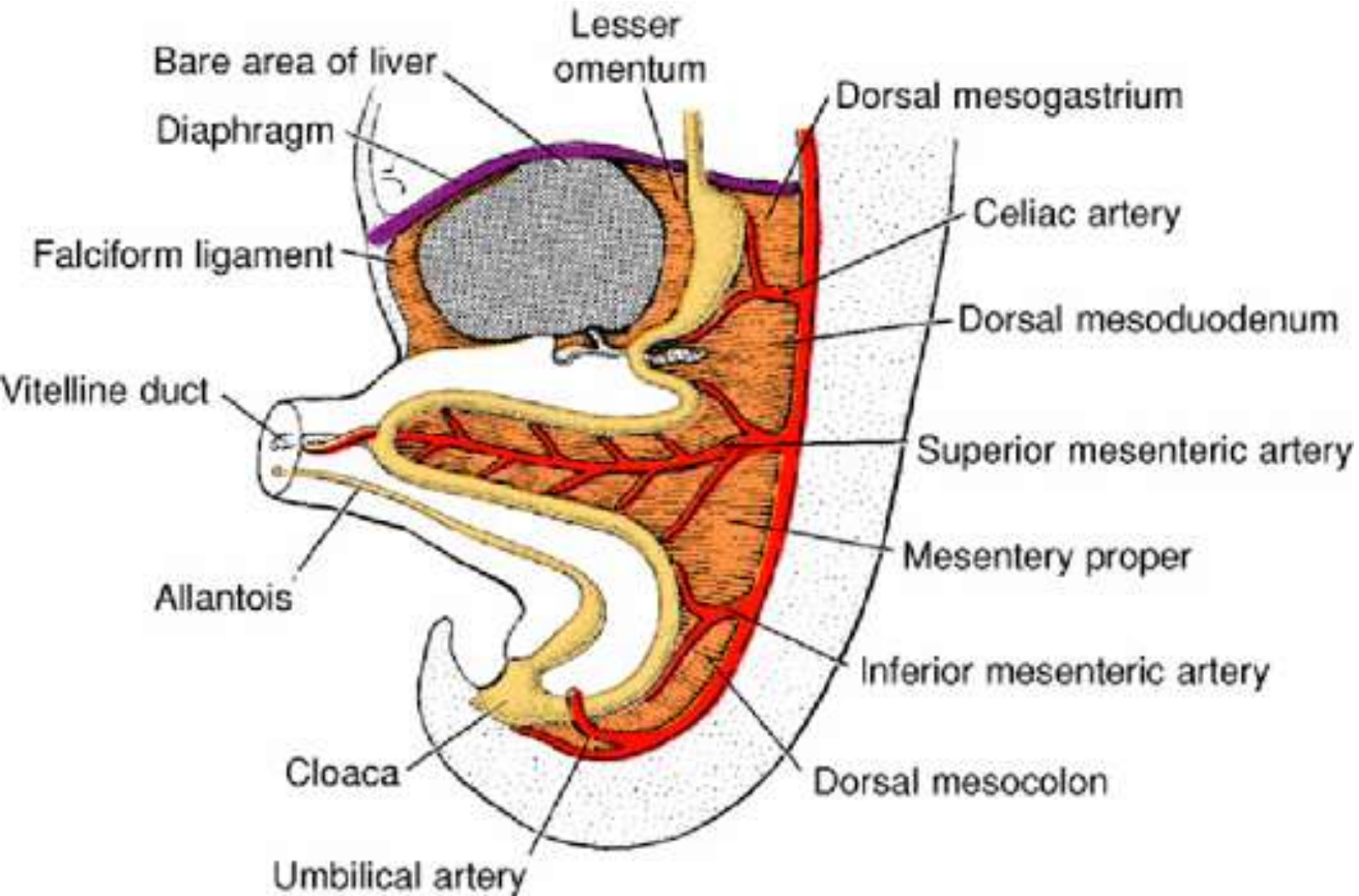
B

Langman embryology

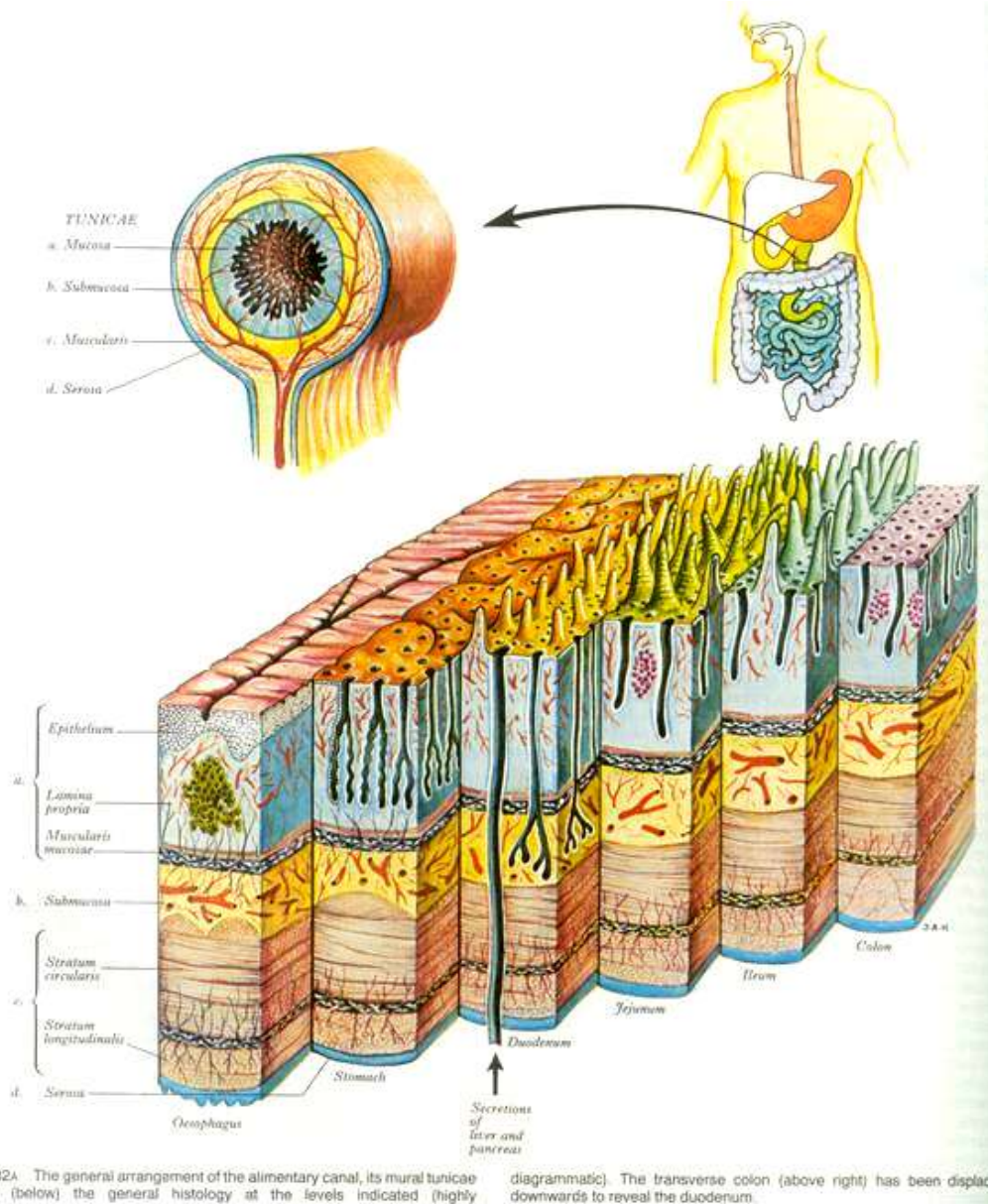
Vývoj



Vývoj



Obečná struktura trávicí trubice



12.82A The general arrangement of the alimentary canal, its mural tunicae and (below) the general histology at the levels indicated (highly diagrammatic). The transverse colon (above right) has been displaced downwards to reveal the duodenum.

P. L. Williams et al.: *Gray's Anatomy*. Churchill Livingstone, New York, 1995



Tunica mucosa

Epithel

Lamina propria mucosae

Lamina muscularis mucosae

Tunica submucosa

Plexus submucosus

Tunica muscularis

Plexus myentericus

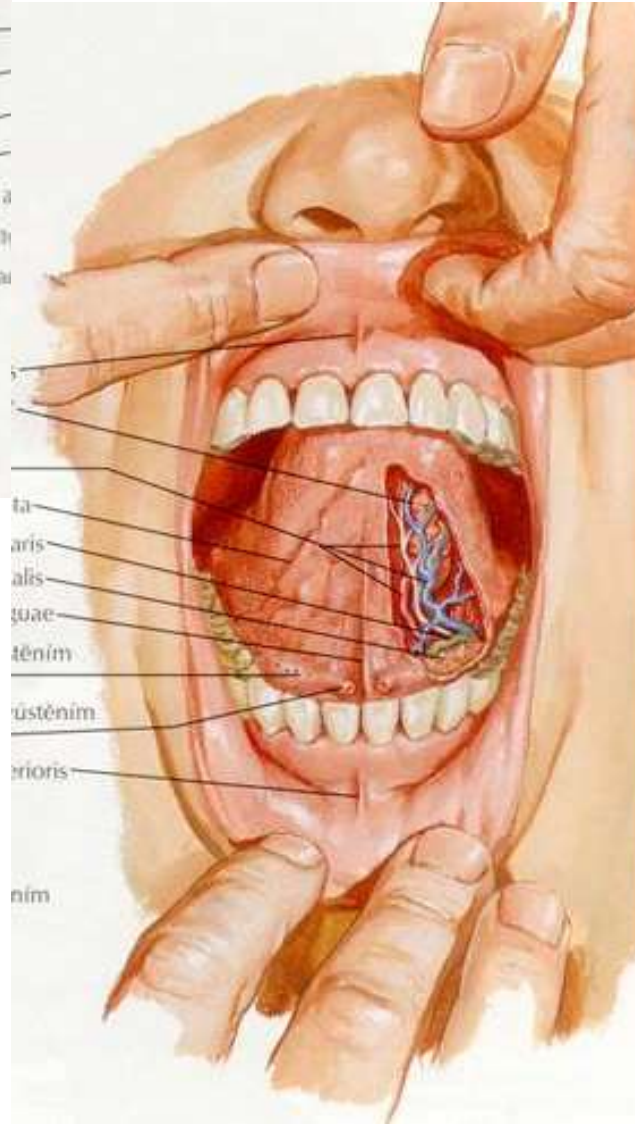
Serosa /adventitia

Cavum oris



Vestibulum oris

Cavum oris proprium

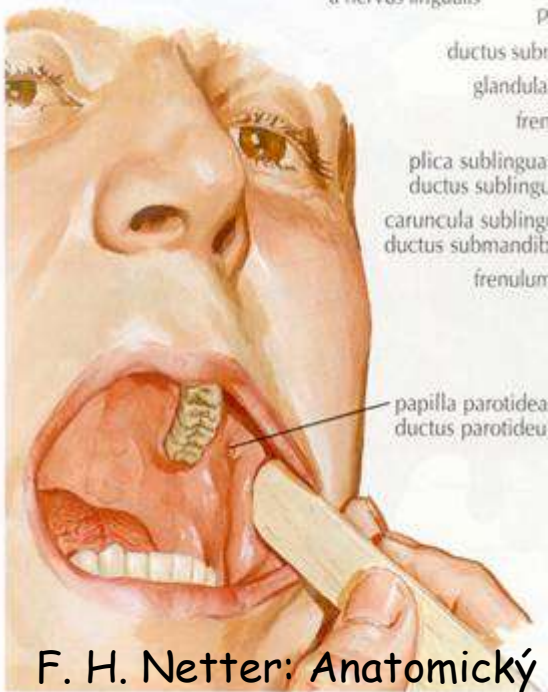


arteria linguans profunda
linguales profundae
a nervus lingualis

ductus sublingualis
glandula sublingualis
frenulum

plica sublingua
ductus sublingualis
caruncula sublingualis
ductus submandibularis
frenulum

papilla parotidea
ductus parotideus



Dutina ústní = cavum oris

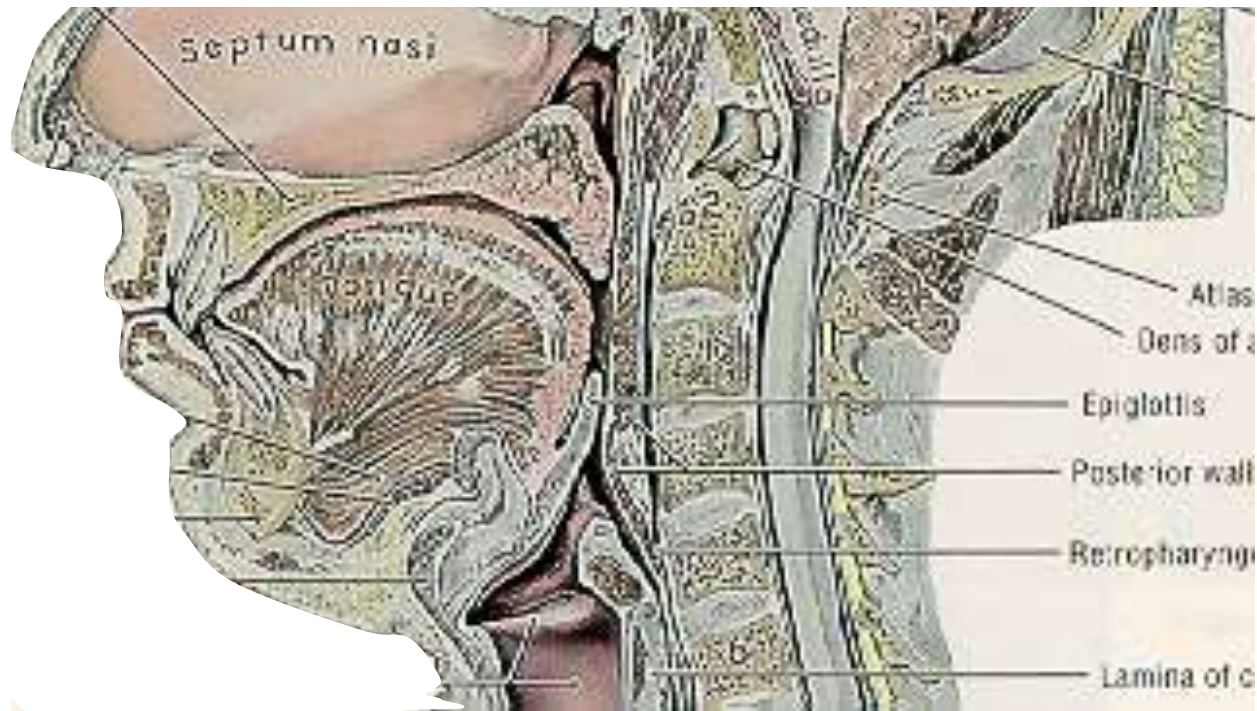
ventrálně - labia oris; rima oris

dorsálně - isthmus faucium

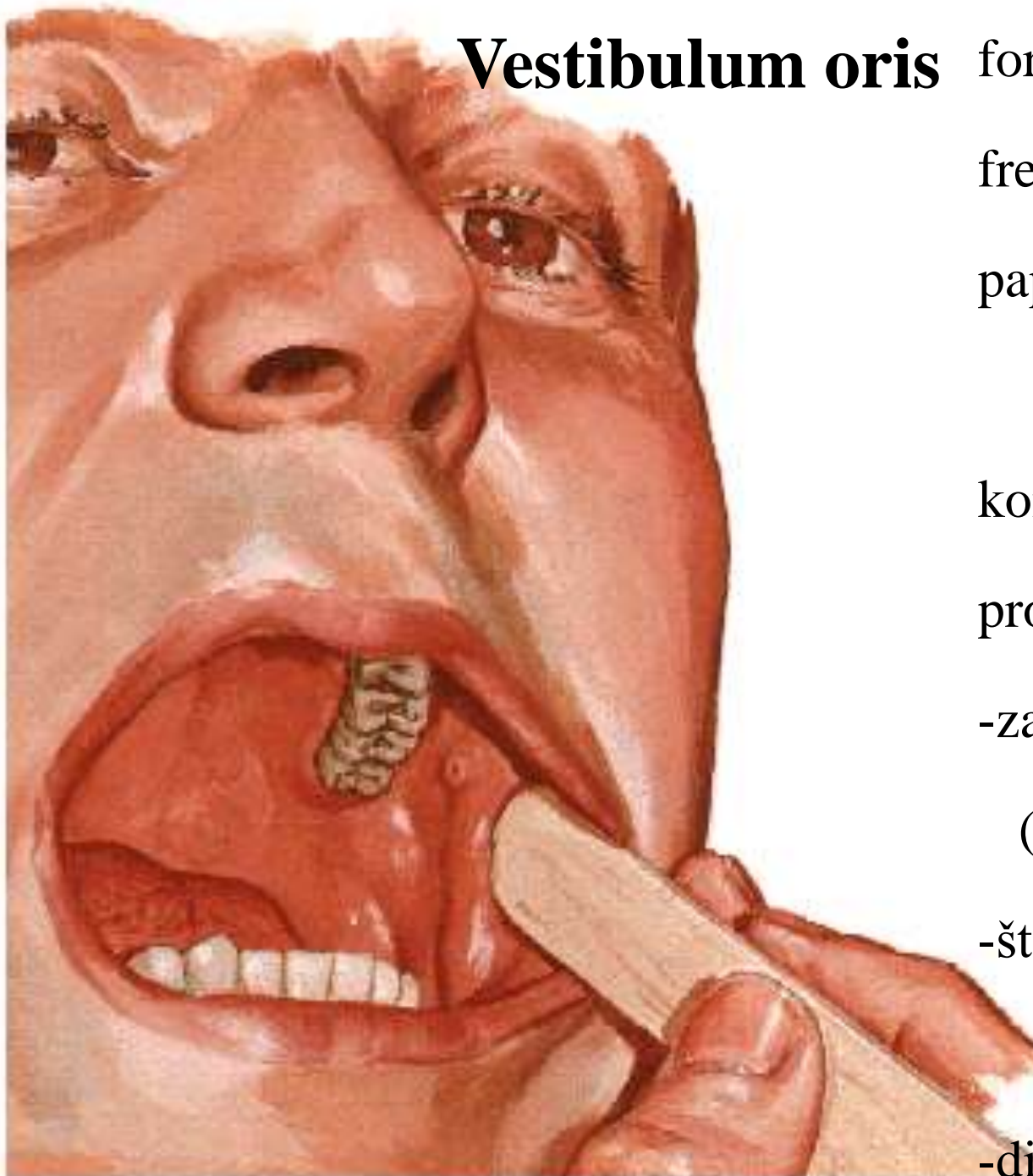
laterálně - buccae

kraniálně - palatum

kaudálně - diaphragma oris (m. mylohyoideus)







Vestibulum oris

fornix vestibuli sup. & inf.

frenulum labii sup. & inf.

papilla parotidea

komunikace s cavitas oris

propria:

-za zubními oblouky

(trigonum retromolare)

-štěrbiny mezi zuby

(tremata)

-diastemata



Cavum oris proprium

dentes

lingua

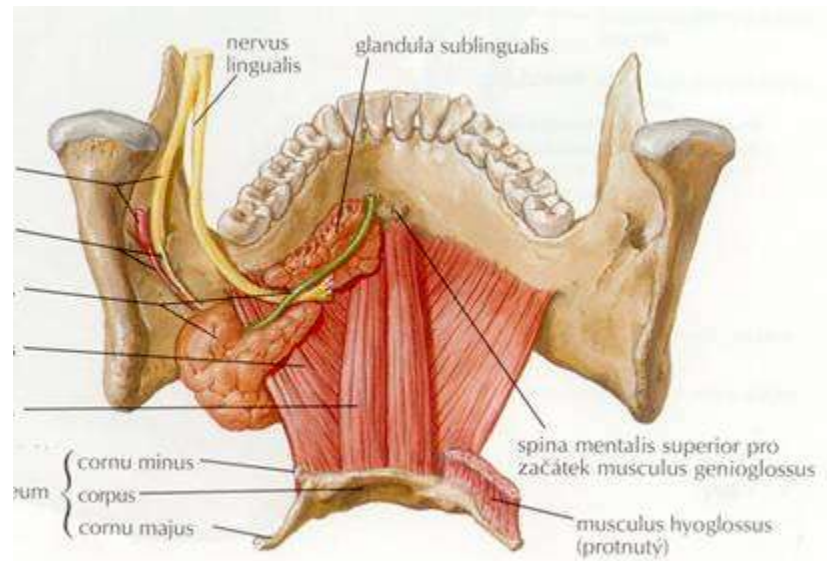
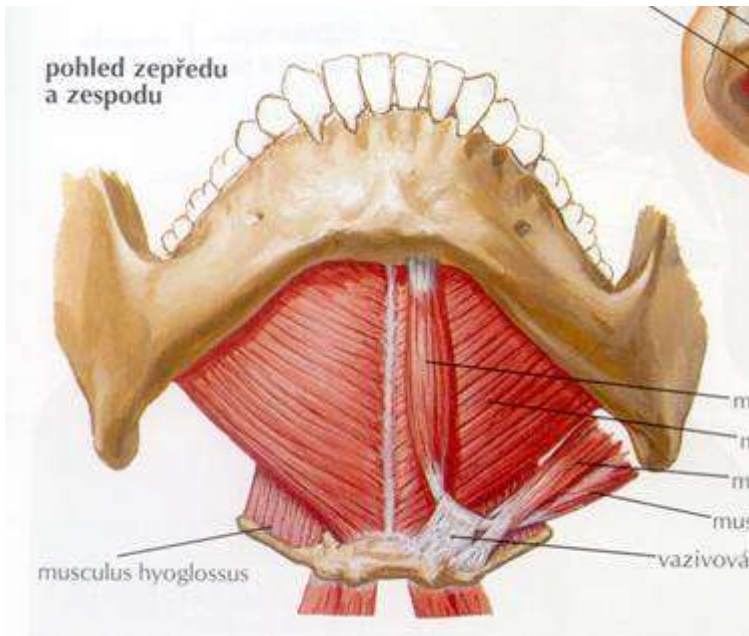
palatum

tonsilla palatina

glandulae salivariae

isthmus faucium

Dutina ústní- spodina



Cévní a nervové zásobení rtů a tváře

J 24

A. facialis → a. labialis sup.& inf.

A. temporalis superficialis → a. transversa faciei

A. maxillaris → a. buccalis

V. facialis

V. transversa faciei → v. retromandibularis

v. faciei profunda → pl. pterygoideus

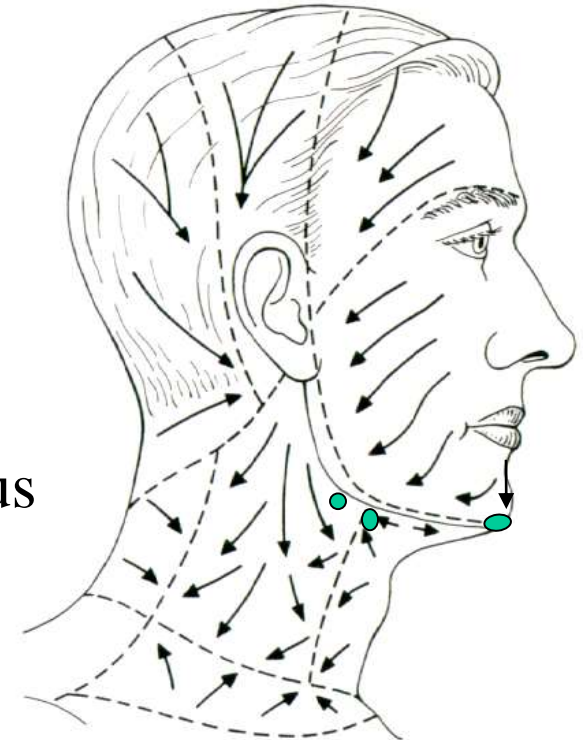
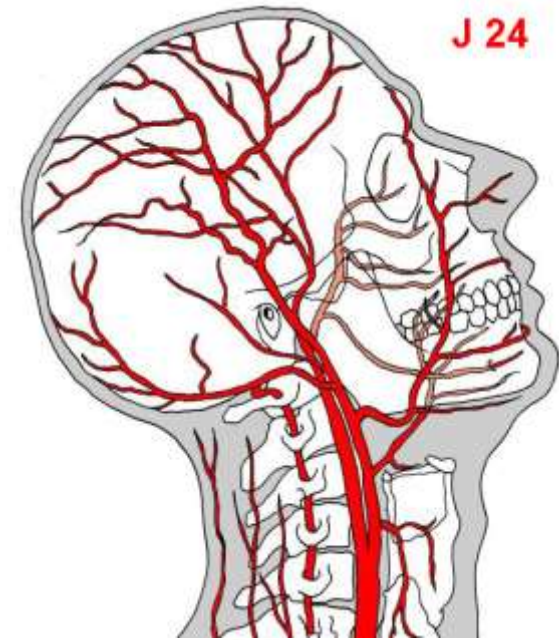
n. l. submentales, submandibulares

Inervace

senzitivní: n.V/2 → n.infraorbitalis, zygomaticus

V/3 → n.mentalis, buccalis

motoricky: n.VII



Odtoky lymfy z oblasti hlavy a krku

Zuby

Permanентní chrup

Sklovina+Cement

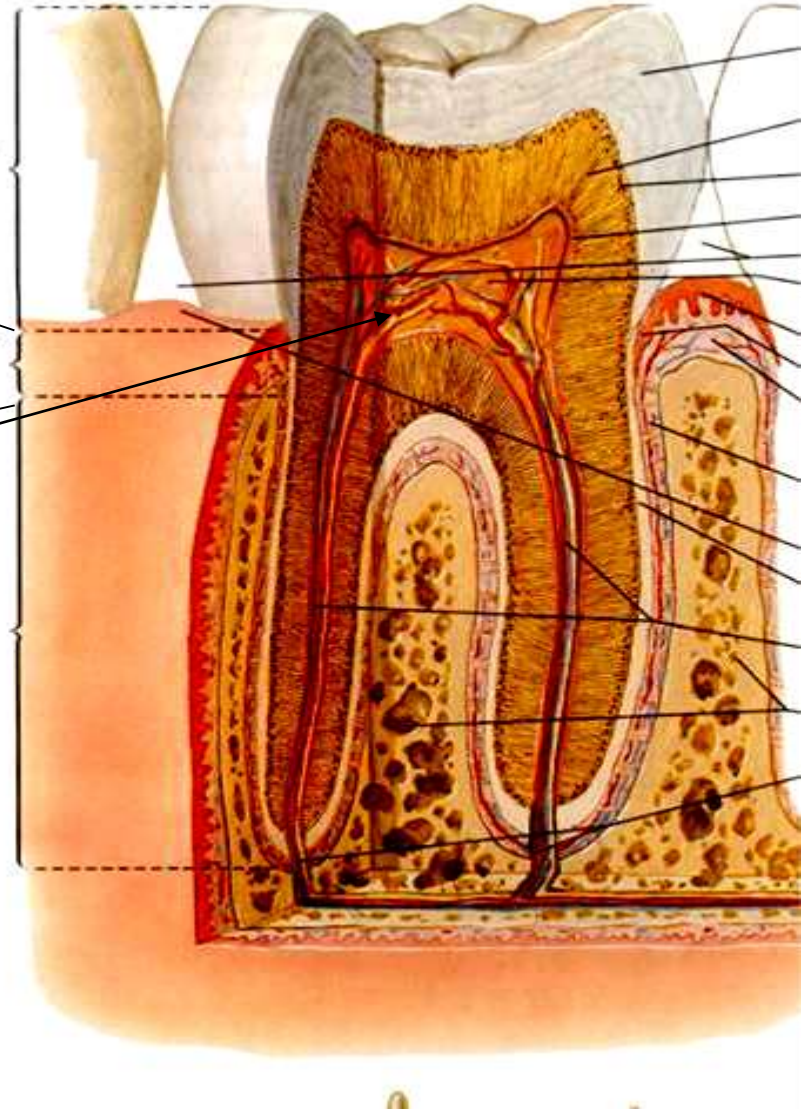
Dentin

Dřeň

Krček
Korunka

Dřeň

Kořen



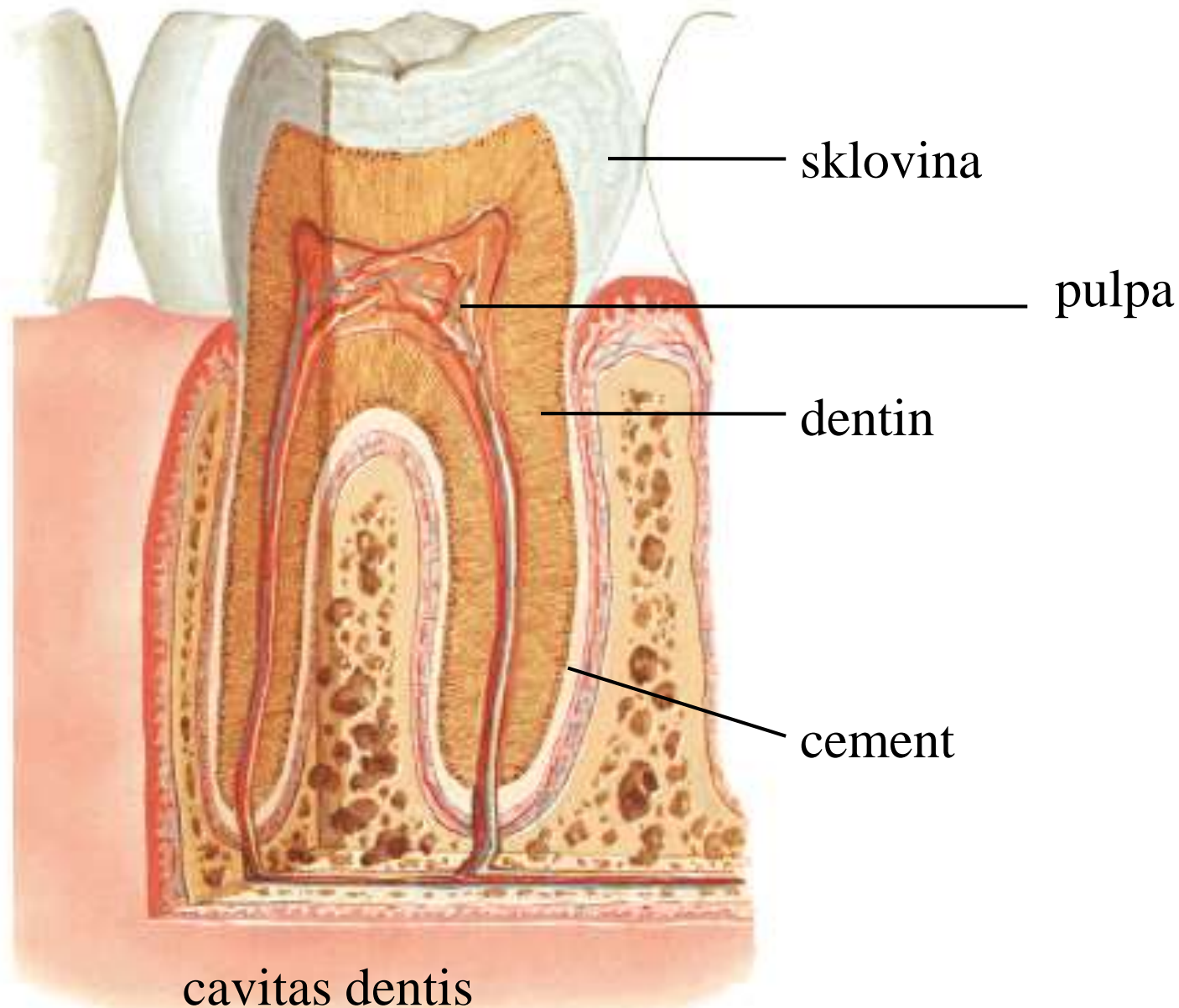
Stavba zubu

korunka

krček

kořen

apex radialis



sklovina

pulpa

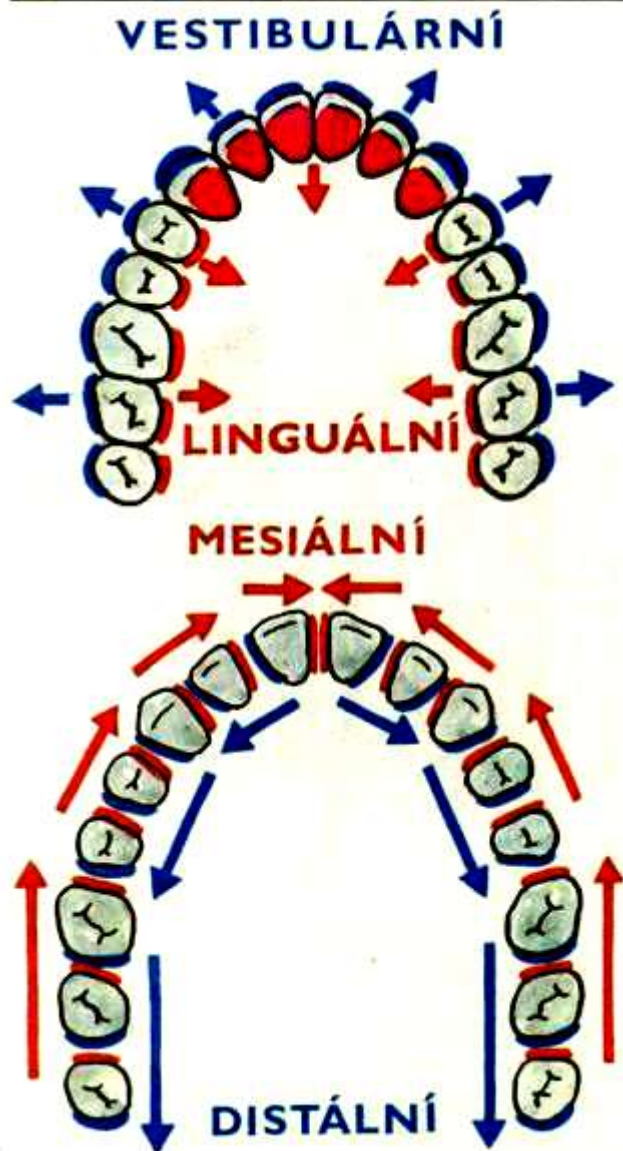
dentin

cement

cavitas dentis

canalis radialis, foramen apicis

Chrup-směry



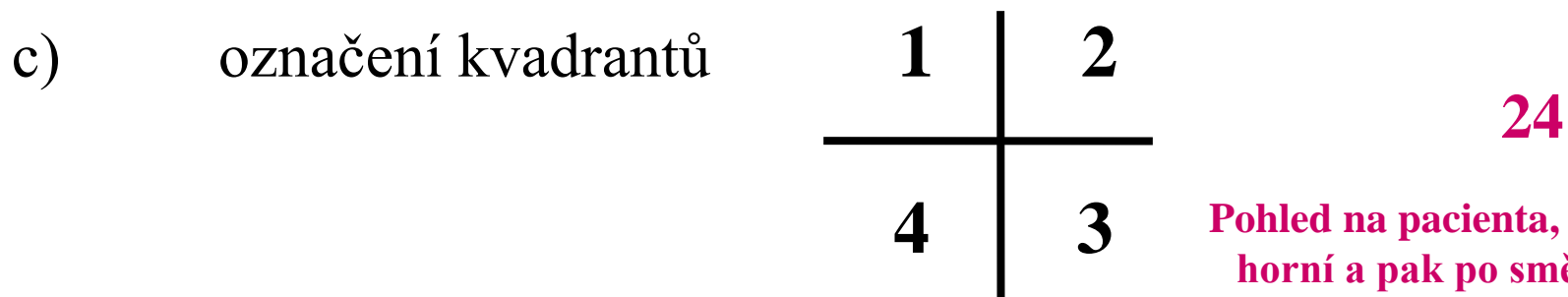
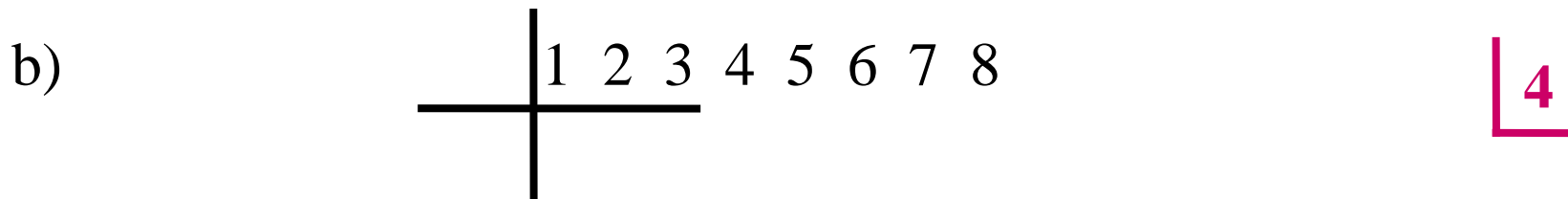
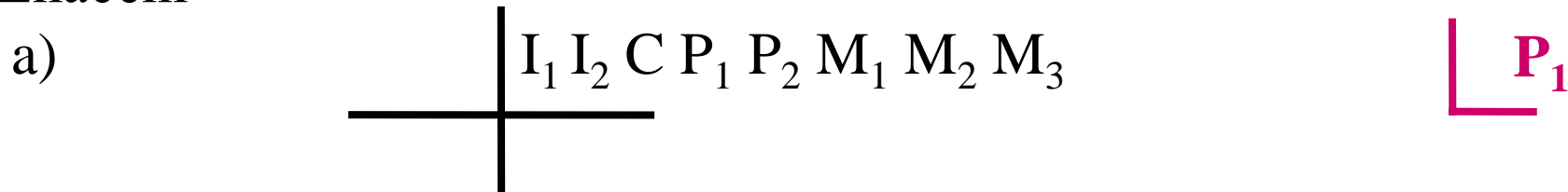
Jednotlivé zuby -liší se tvarem, počtem kousacích hrbolků a kořenů

Definitivní chrup = dentes permanentes - 32 zubů ve 4 kvadrantech

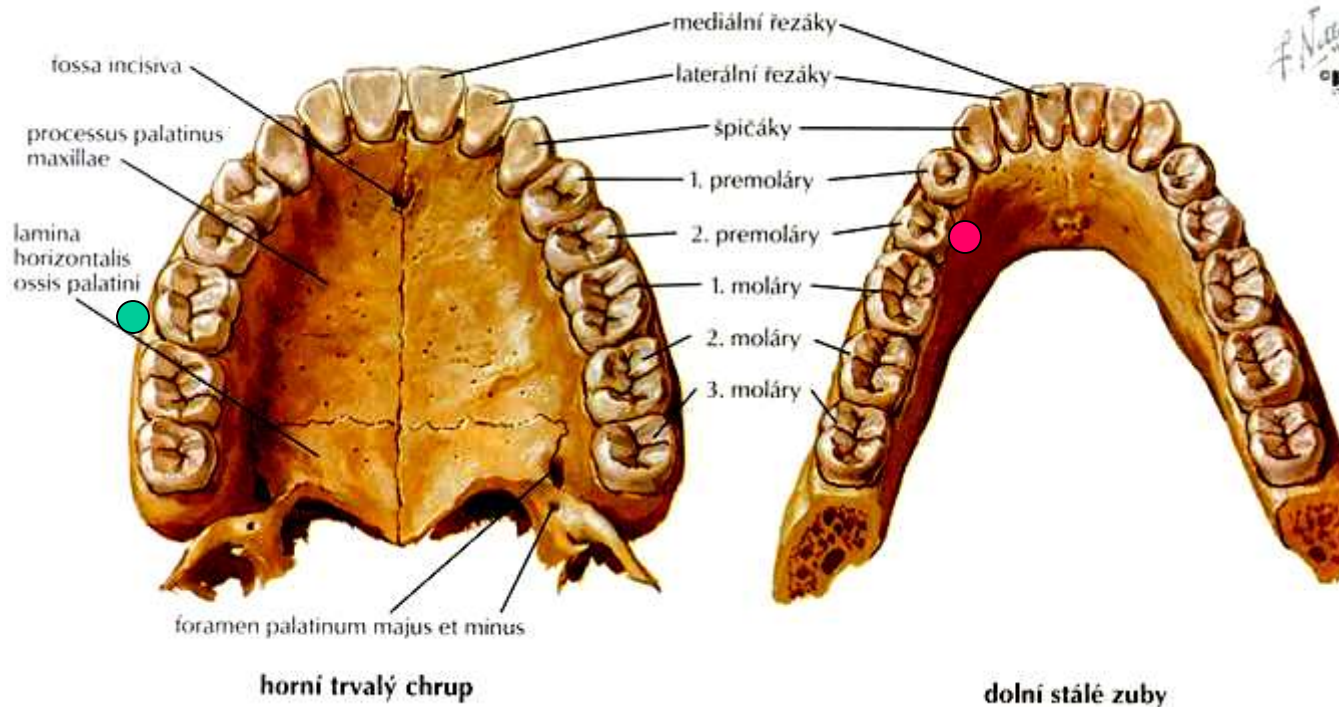
1 kvadrant: 2 řezáky (dentes incisivi), 1 špičák (dens caninus),

2 zuby třenové (dentes praemolares), 3 stoličky (dentes molares)

Značení



Pohled na pacienta, 1. je pravý
horní a pak po směru hodin



● M1 16

● P2 35

zub

I

C

P

M - horní

- dolní

kousací hrbolky

řezací hrana

2 šikmé hrany → 1

2

4 ; rýhy do tvaru „H“

4 (5) ; rýhy do kříže

kořeny

1

1

1 (2)

3

2



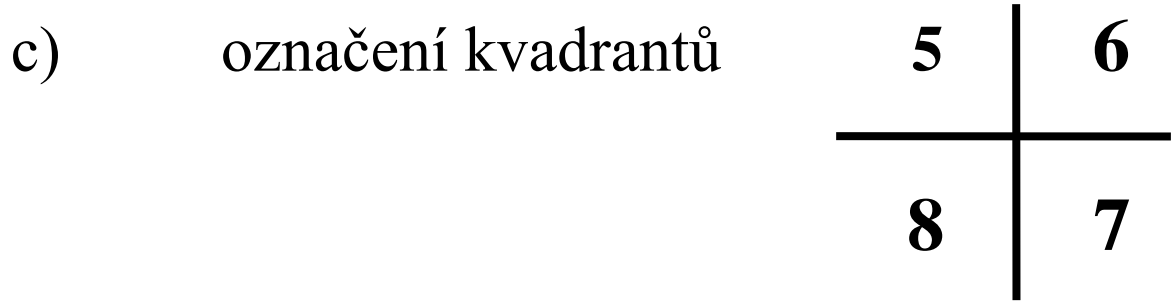
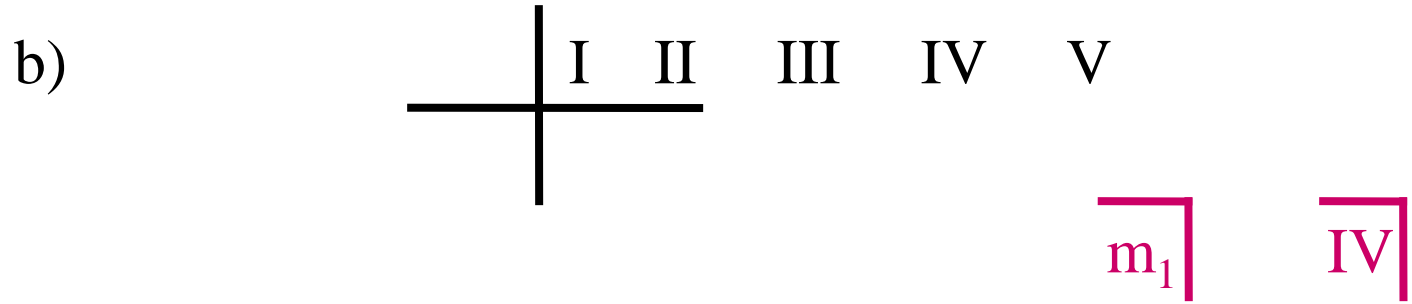
Dočasný chrup = dentes decidui, lactei, temporales

20 zubů ve 4 kvadrantech

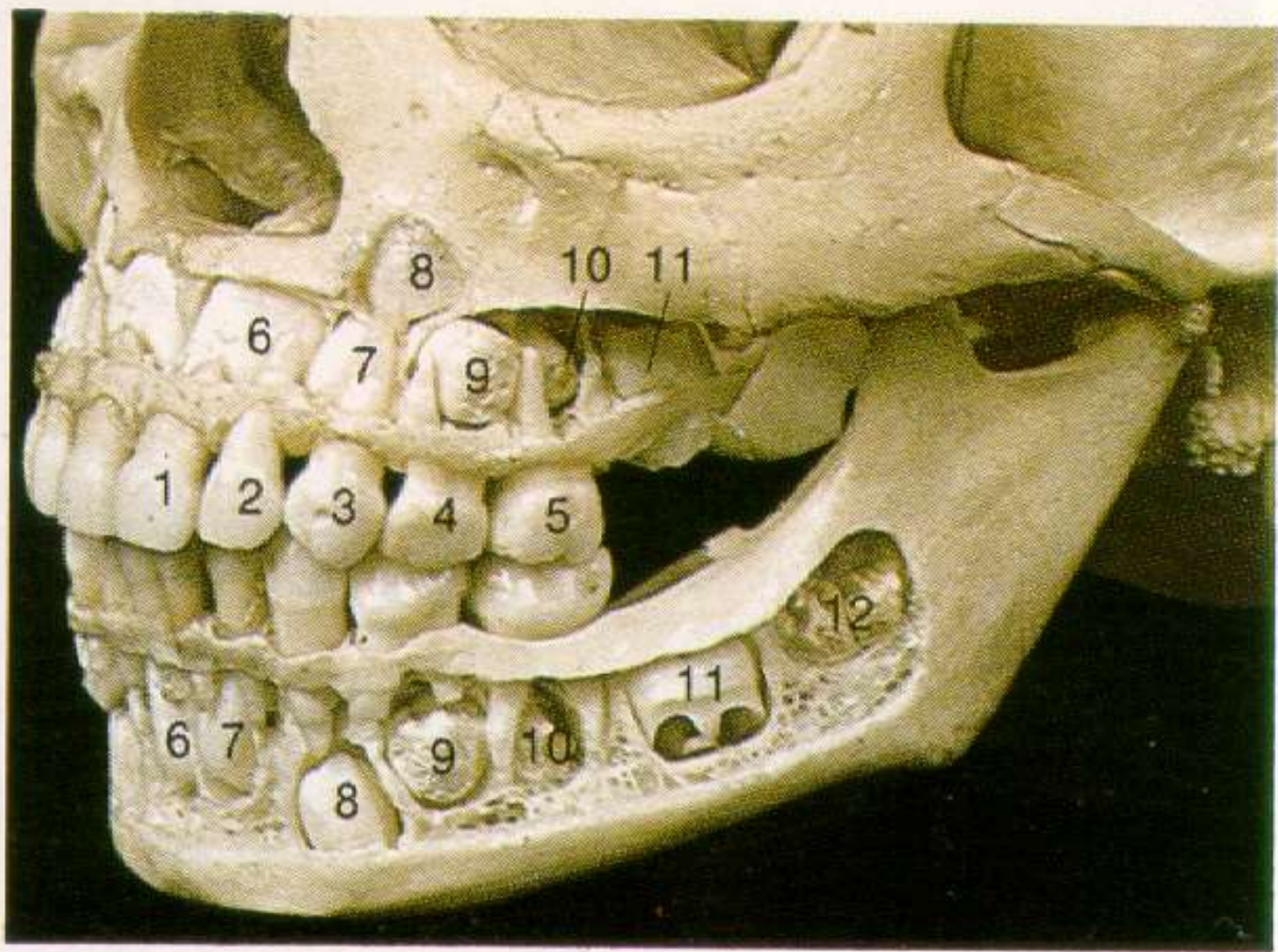
1 kvadrant: 2 řezáky (dentes incisivi), 1 špičák (dens caninus),

2 stoličky (dentes molares) ; zuby třenové nejsou vytvořeny

Značení







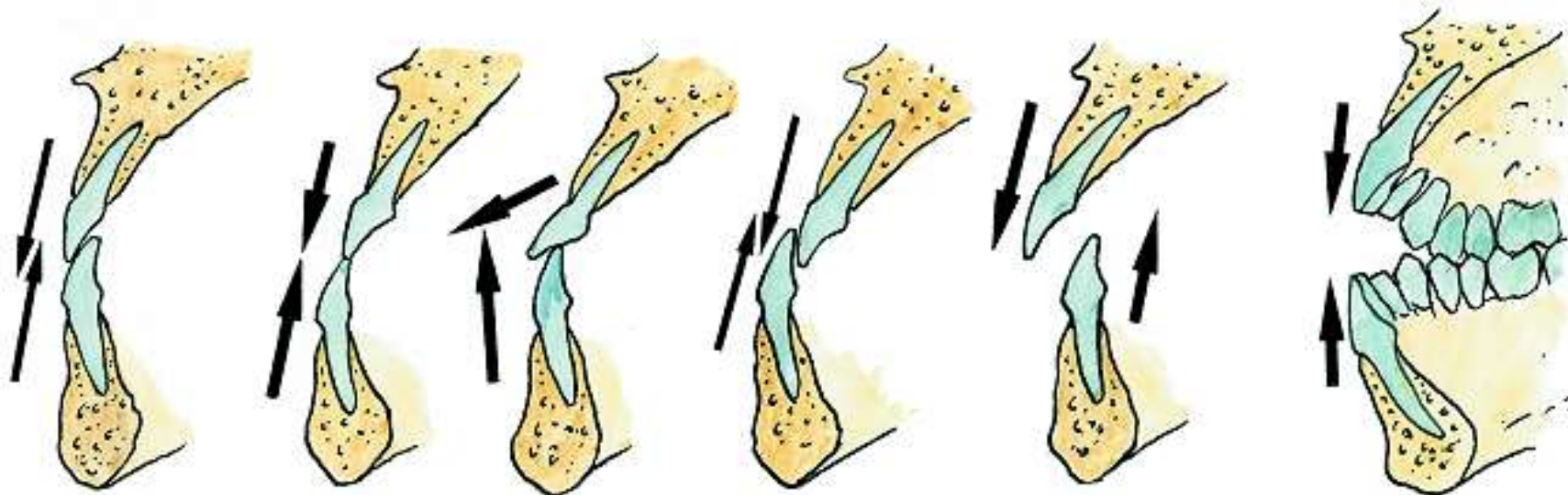
Erupce

		M_1	6 - 8 R
i_1	6.-8.M	I_1	6 - 7 R
i_2	7.-12.M (horní dřív)	I_2	7 - 9 R
m_1	12.-16.M	P_1	9 - 11 R
c	15.-20.M	C	9 - 14 R
m_2	20.-30.M	P_2	11 - 14 R
		M_2	10 - 15 R
		M_3	17 - 30 R

Zubní věk - dle erupce

- dle dalšího vývoje zubu (abraze, sekundární dentin)

Chrup jako celek – druhy skusu



1

2

3

4

5

6

1 – nůžkovitý (psalidodontie, nejčastější)

2 – klešťovitý (labidodontie)

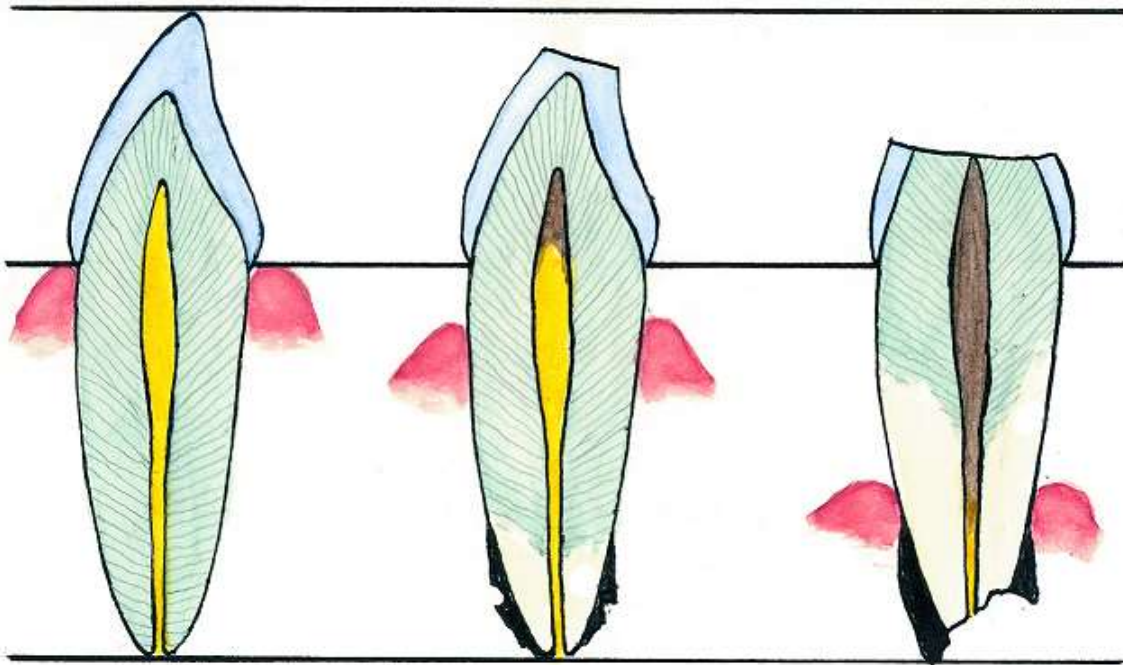
3 – střechovitý (stegodontie)

4 – progenie

5 – opisthodontie

6 – otevřený skus

Chrup jako celek – opotřebení zubů



abrazie =
obrušování skloviny

gingivální recese =
ústup dásně z krčku

Cévní a nervové zásobení zubů

n.V/2 rr.alveolares sup. post.
rr.alveolares sup. ant.

n.V/3 n. alveolaris inf.

plexus dent. (sup., inf.)
rr. dentales, gingivales

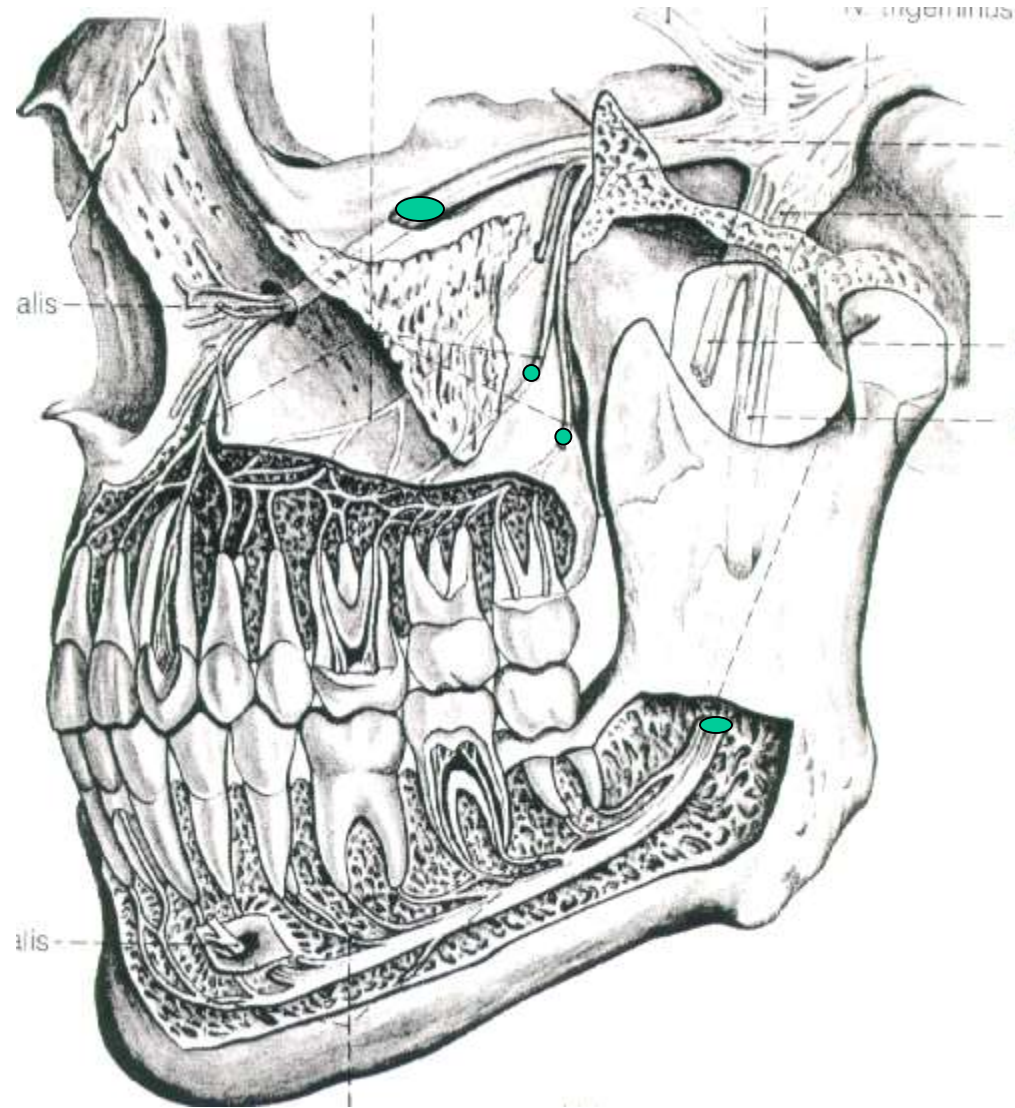
aa. alveolares sup. post.

aa. alveolares sup. ant.

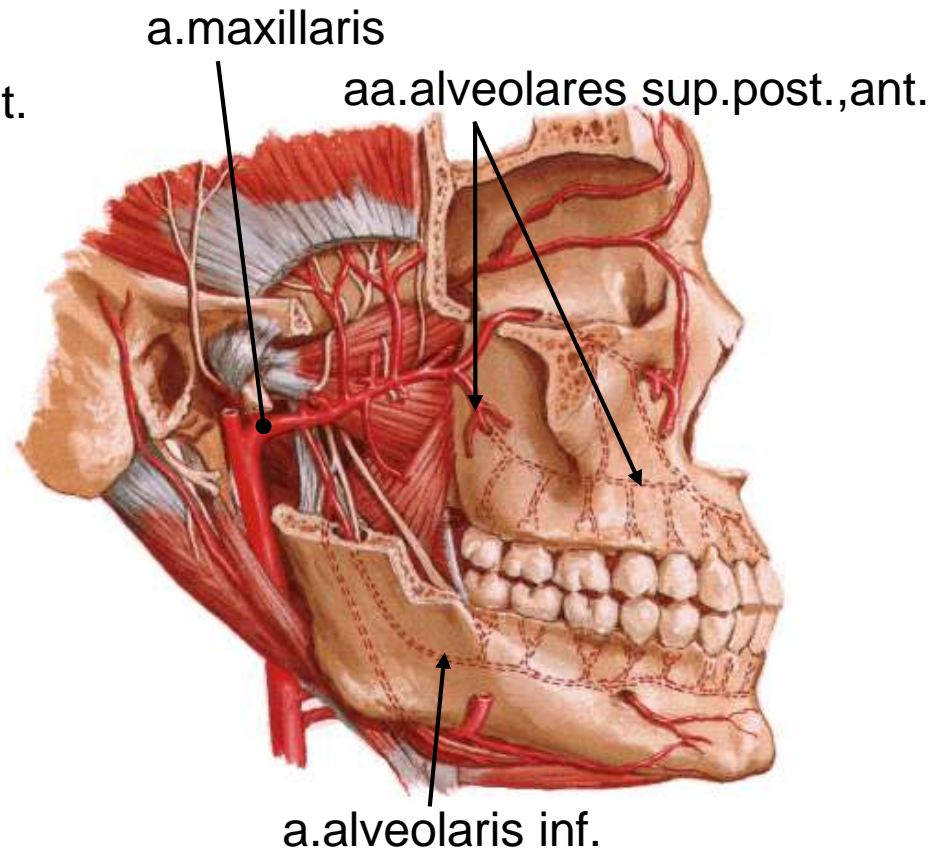
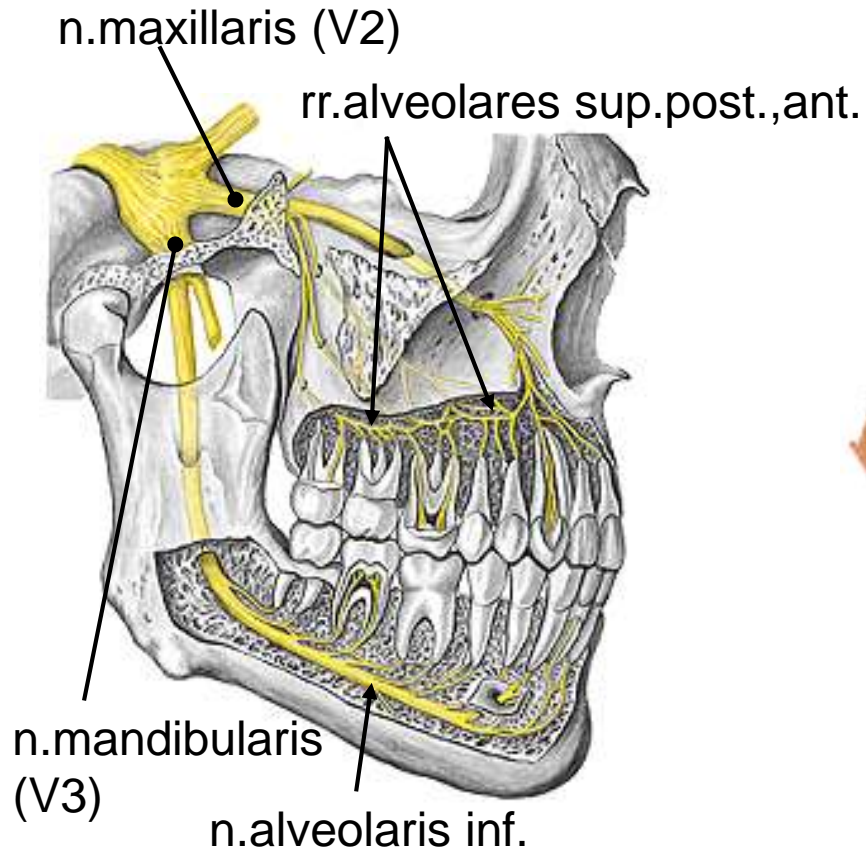
a. alveolaris inf.

vv. - podél tepen do
plexus pterygoideus

ln. submandibulares (x M₃)



Cévy a nervy zubů



žíly - podél tepen do plexus pterygoideus
lymfa do nodi submandibulares

Svodné anestezie

foramen infraorbitale

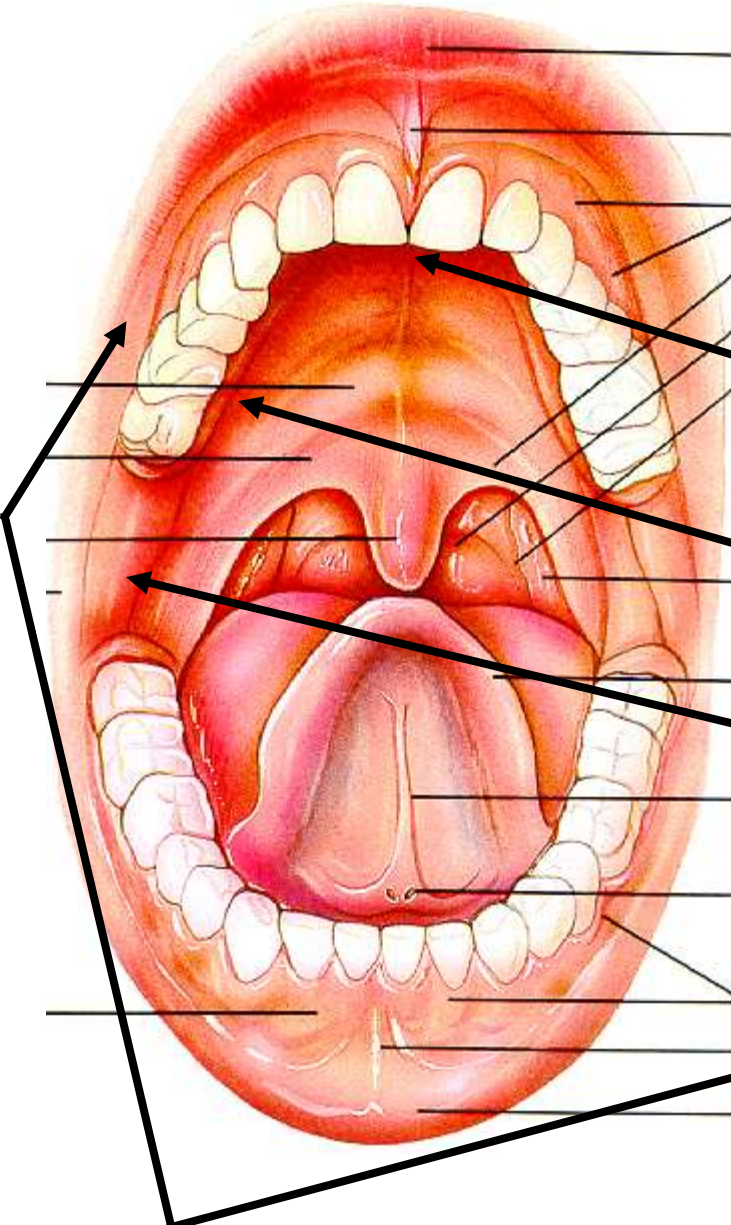
foramen incisivum

foramen palatinum maius

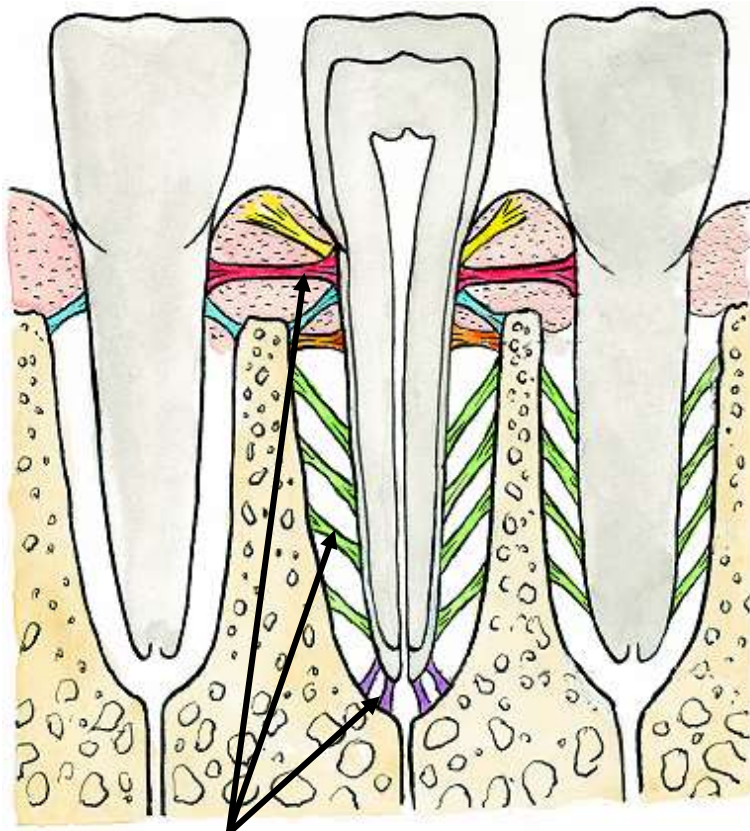
foramen mandibulare

tuber maxillae

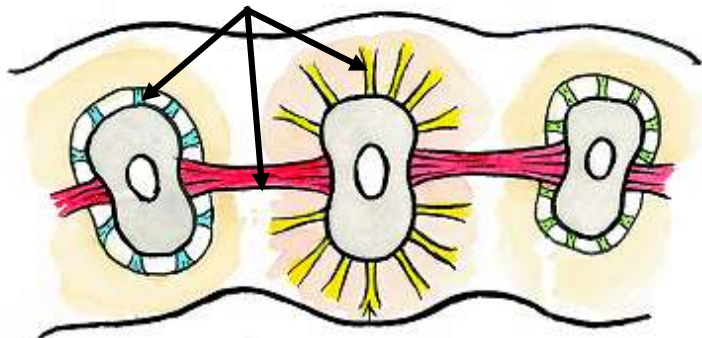
foramen mentale



Parodont



periodontium



- zajišťuje upevnění zuby v čelisti

Součásti :

kost alveolu s periostem

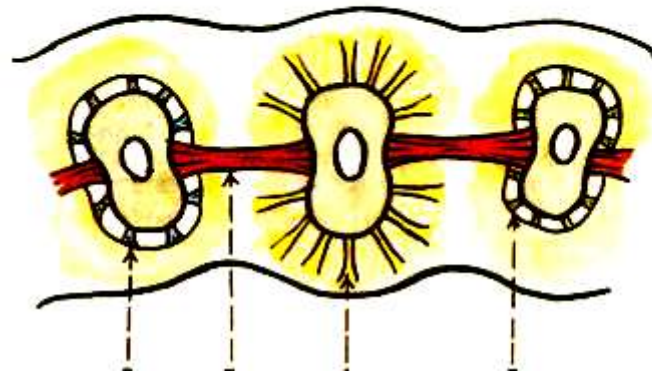
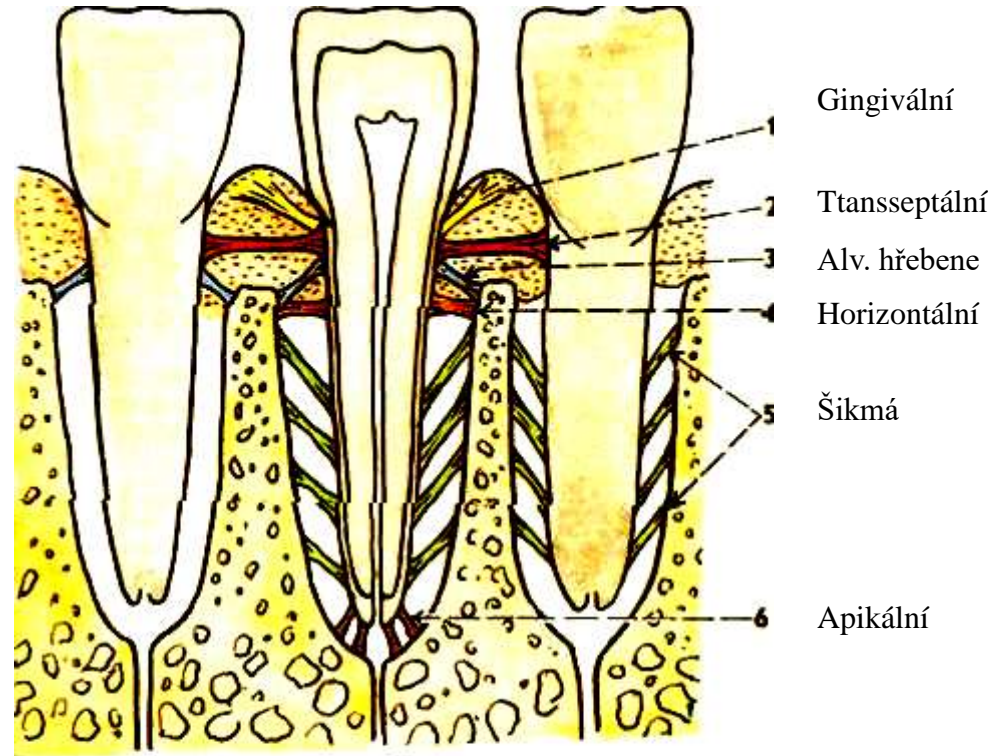
cement

periodontium, ozubice (závěsný vazivový aparát; vlákna mají různý směr)

Lig.circulare, lig. horizontale, alveolární vlákna

gingiva, dásěň (sliznice na alveolárních výběžcích; srůstá s periostem = mukoperiost)

Fixace



Gingiva - dáseně

= sliznice kryjící alveolární výběžky

srostlá s periostem → mukoperiost

margo gingivalis, sulcus gingivalis, papillae gingivales

Gingivodentální uzávěr tvoří:

epitel dásně - sklovina

kolagenní vazivo dásně - cement

- brání vniku infekce

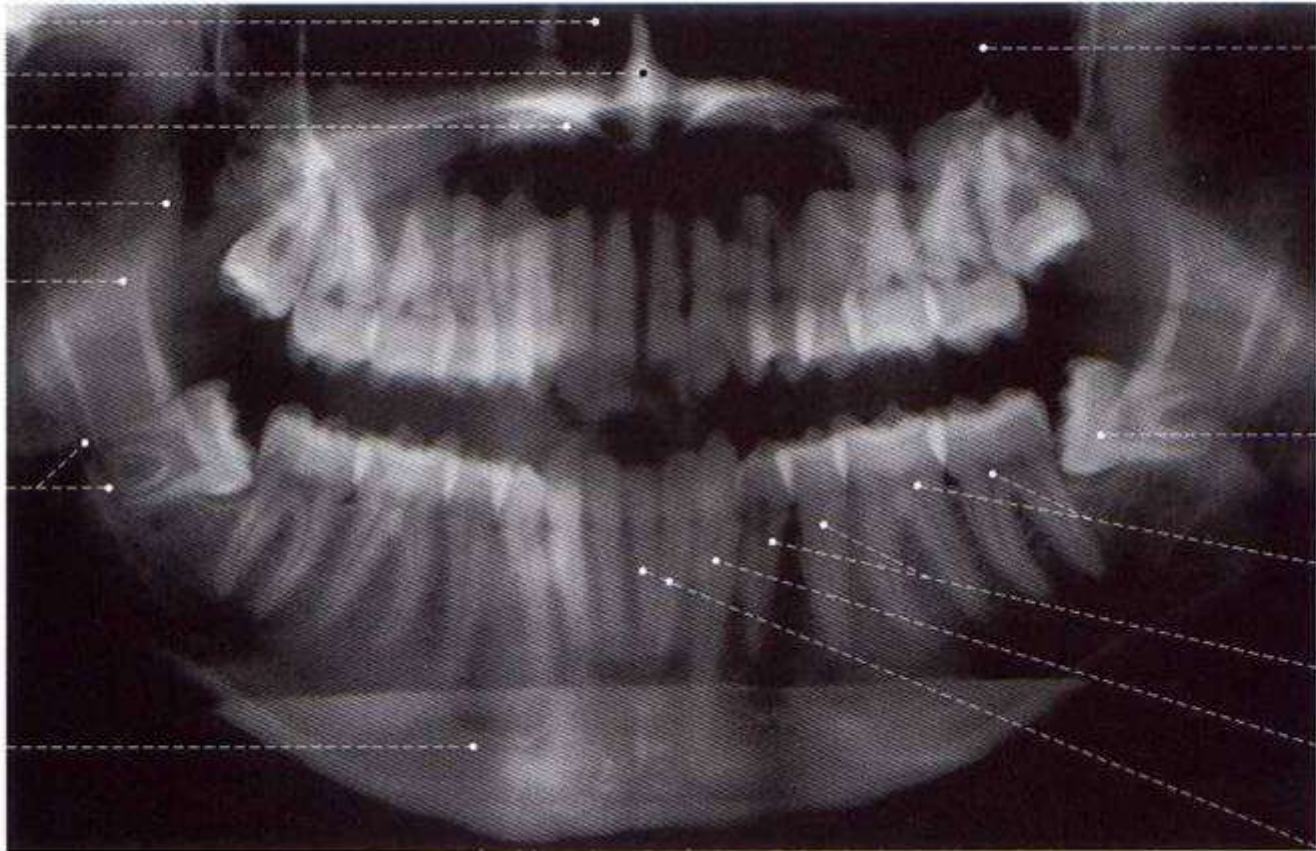
- porucha → parodontóza

Tepny - viz zuby

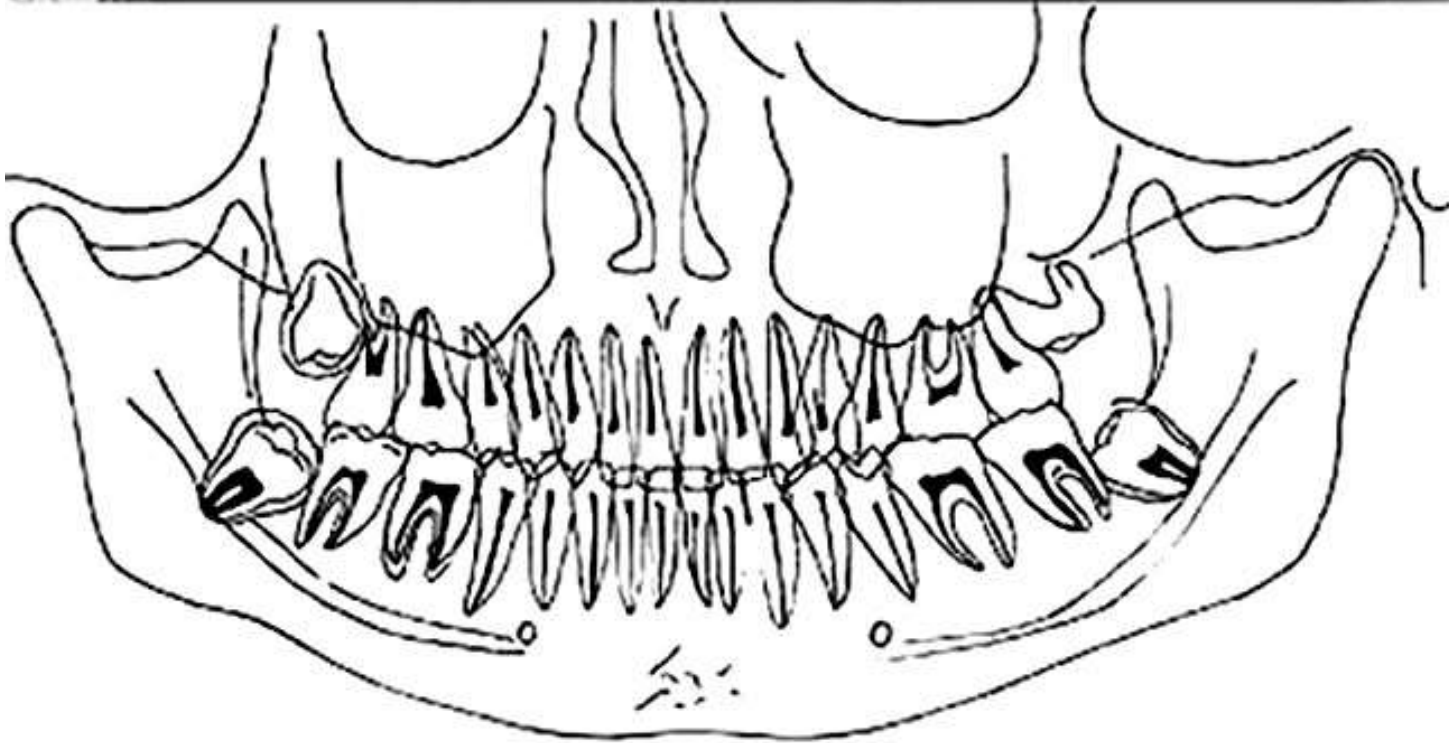
Žíly - viz zuby, spodina úst, tvář

Nervy - viz zuby, patro, spodina, tvář a rty

Cavitas nasi
Septum nasi
Palatum durum
Proc. coronoideus
Ramus mandibulae
Canalis mandibulae
Corpus mandibulae



Sinus maxillaris
Dens serotinus (molaris III) inferior (lying in horizontal position/querliegend)
Dentes molares inferiores I et II
Dentes praemolares inferiores I et II
Dens caninus
Dentes incisivi inferiores



Lingua-Glossa

Jazyk

Tongue

Jazyk - lingua (latinsky), glossa (řecky)

valleculae

plicae glossoepiglotticae

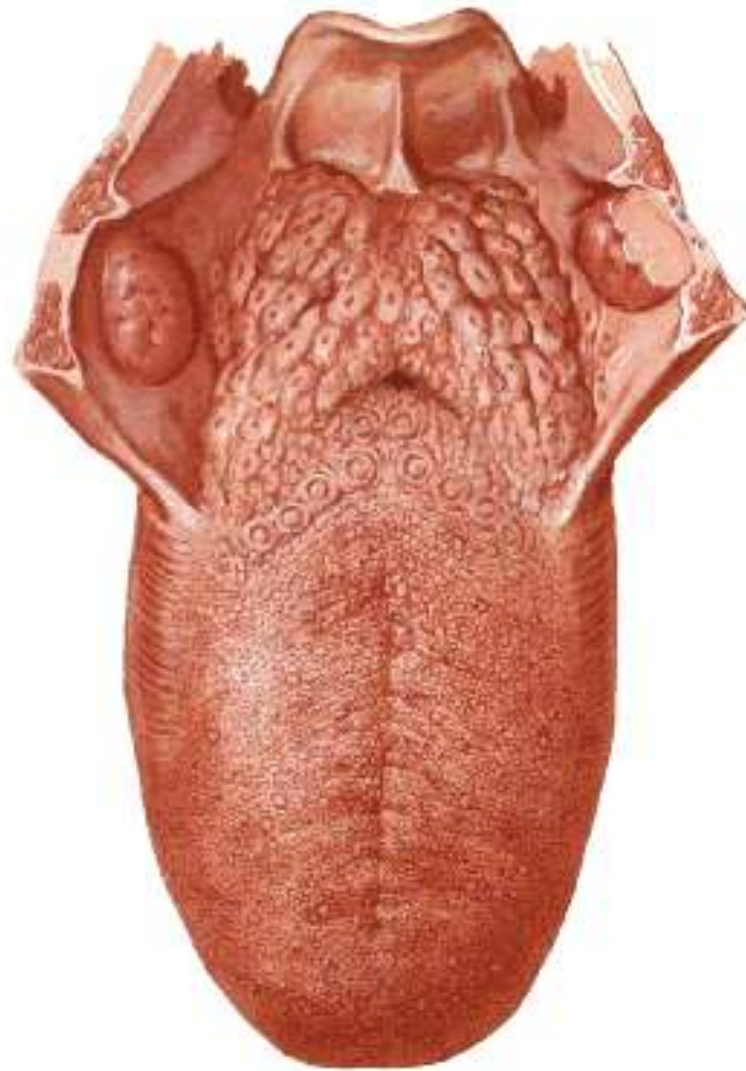
radix

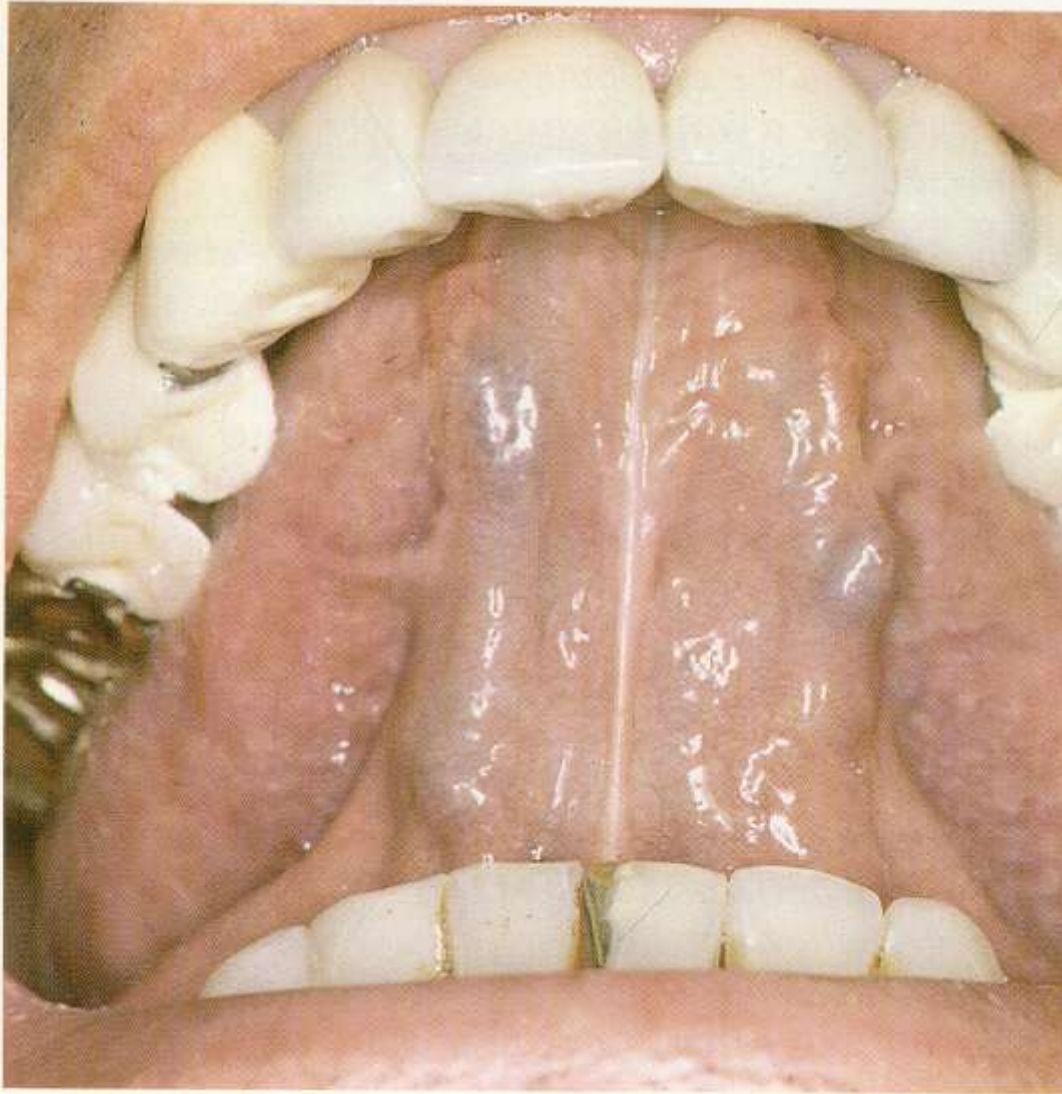
sulcus terminalis

corpus

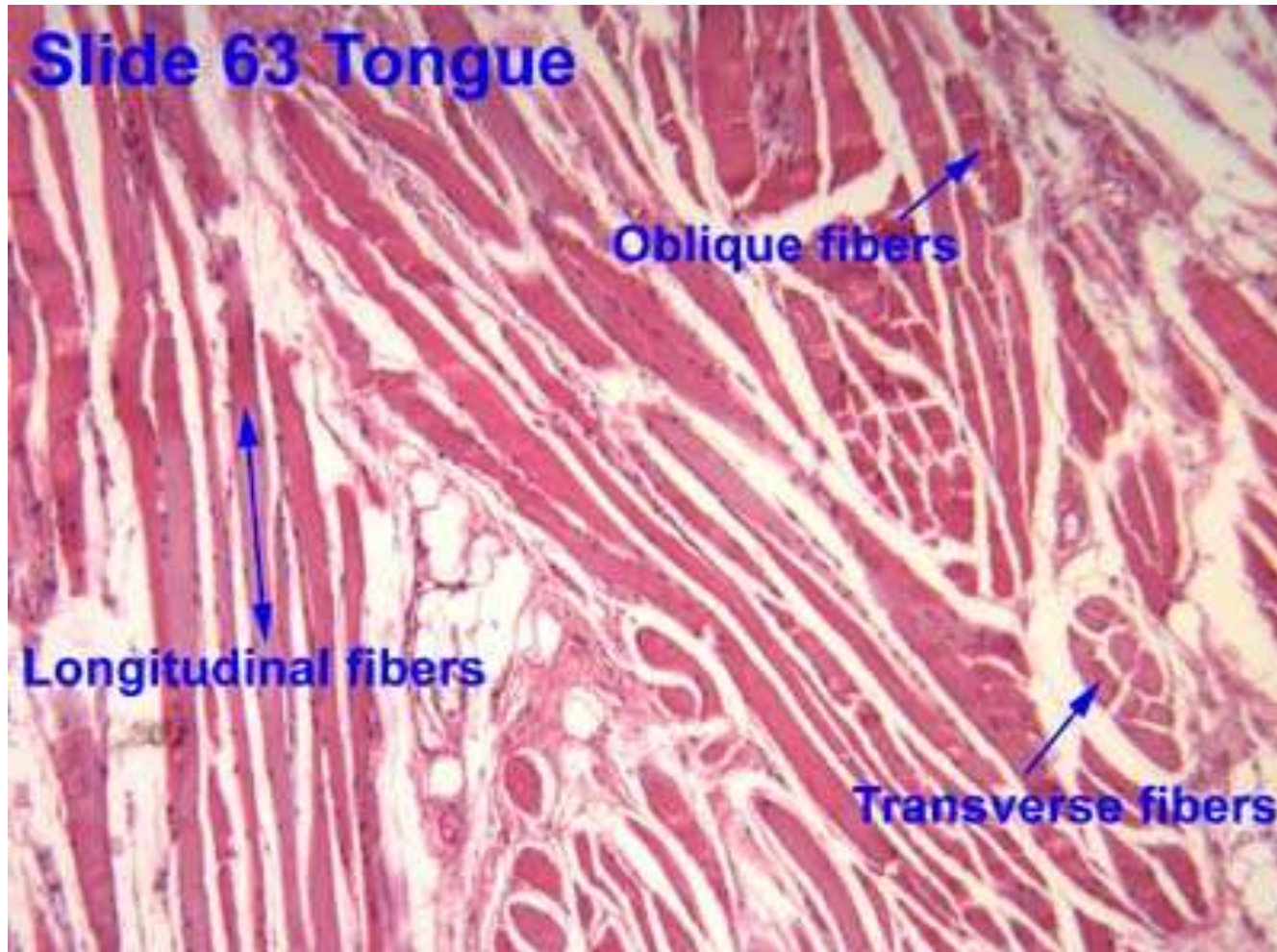
dorsum

apex





Intraglosální svaly



Svaly jazyka

Skelet jazyka - tvar písmene T

aponeurosis linguae, septum linguae

Intraglossální svaly:

trojrozměrná síť, dle směru:

m. longitudinalis sup., inf.

m. transversus linguae

m. verticalis linguae

Extraglossální svaly: m. genioglossus

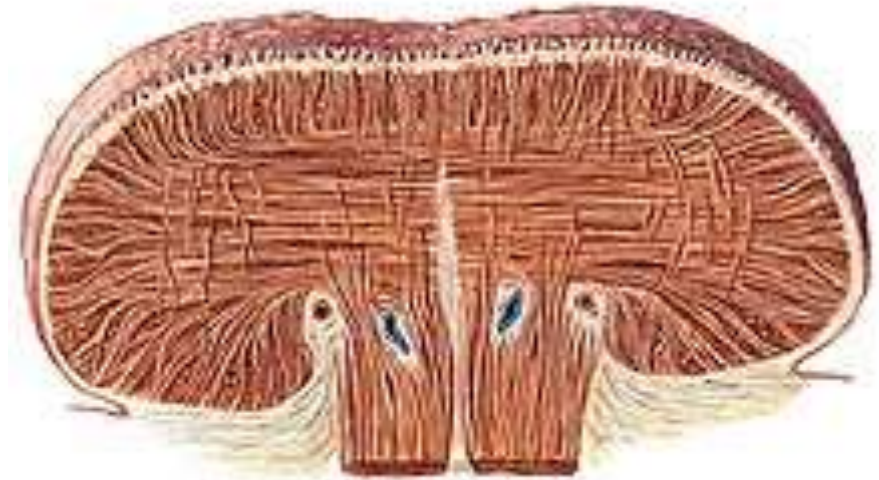
m. hyoglossus

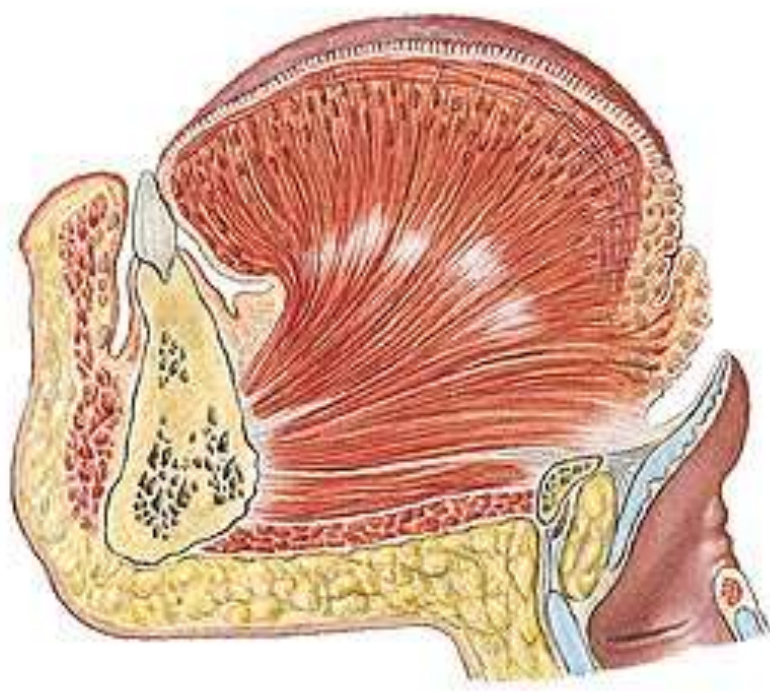
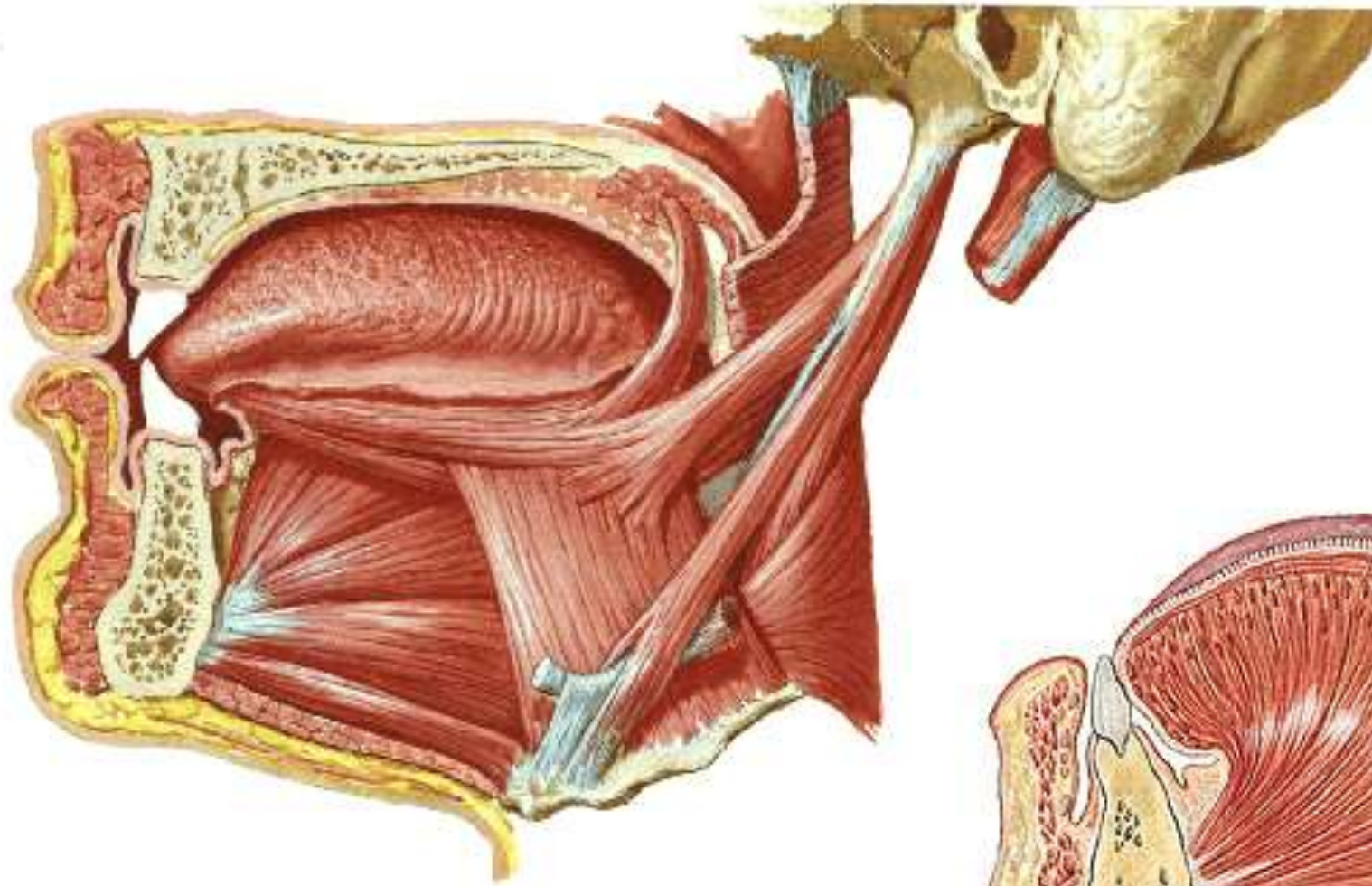
m. styloglossus

m. palatoglossus

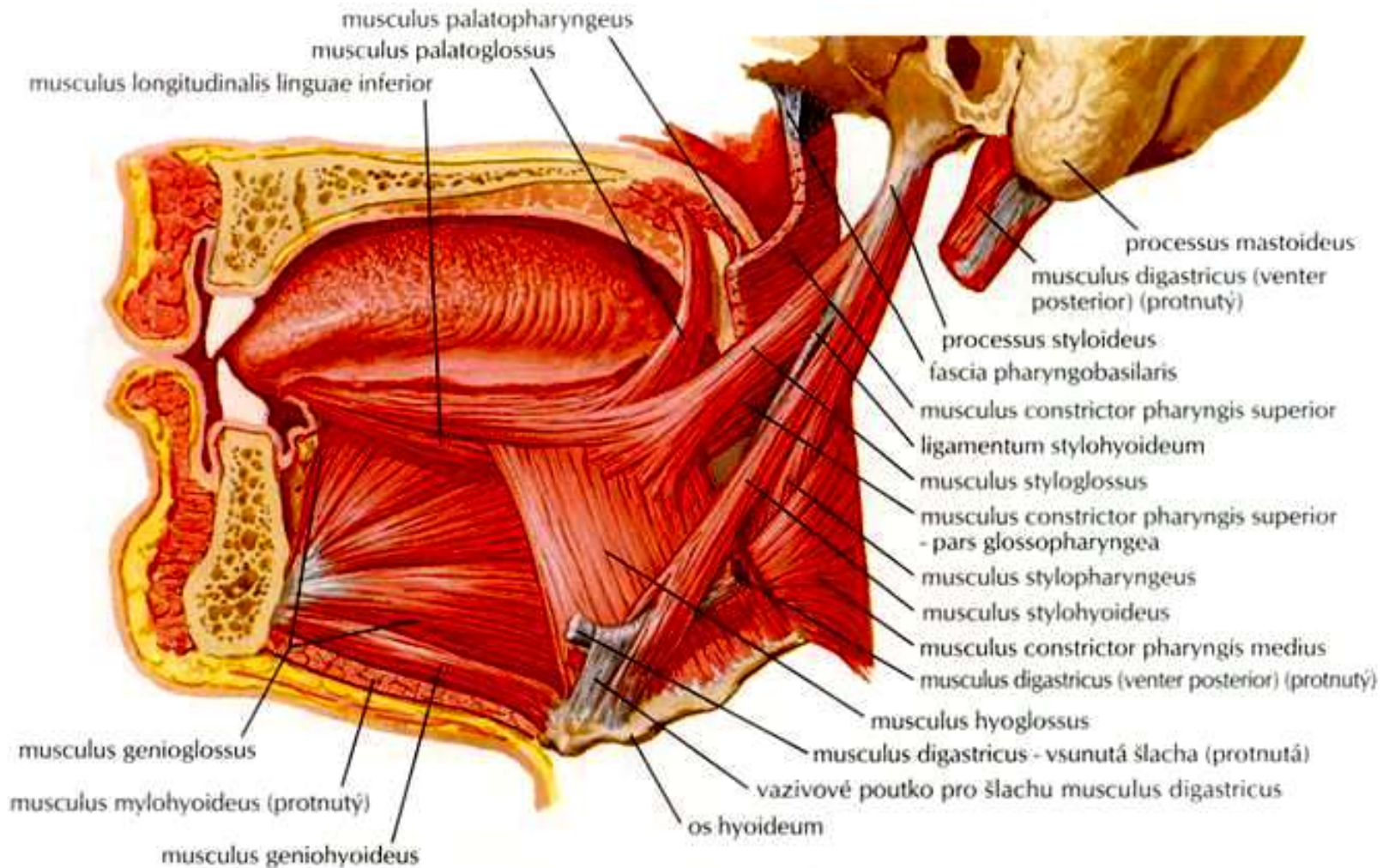
inervace - n.XII

mimo m.palatoglossus (IX)

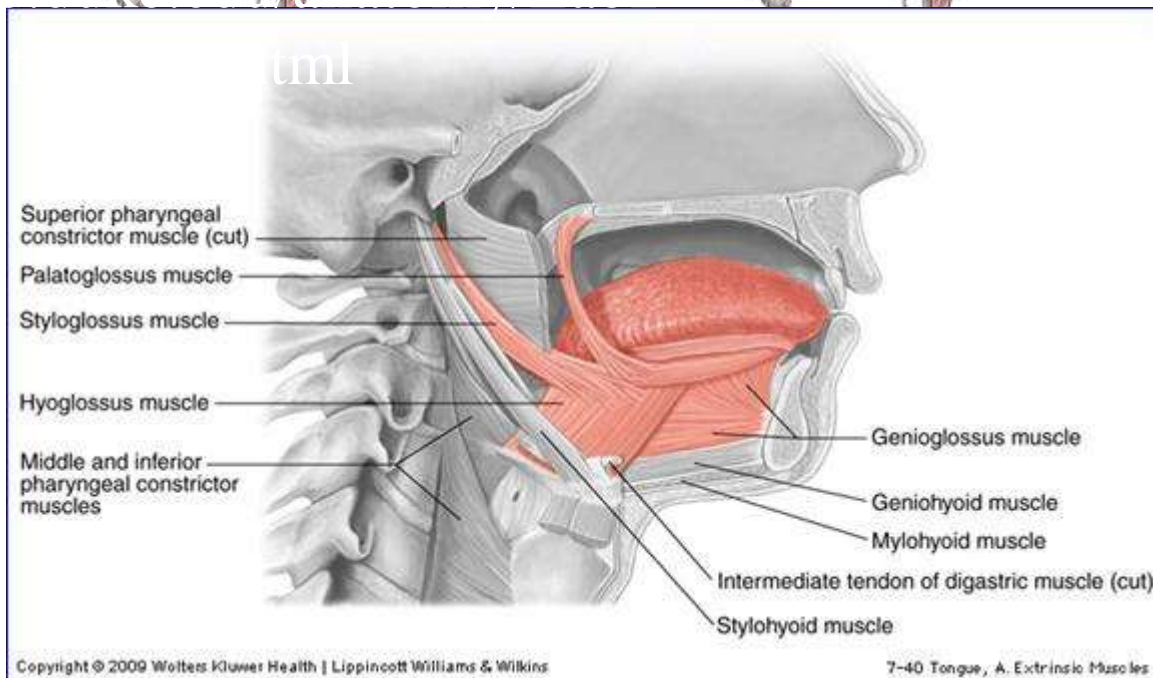
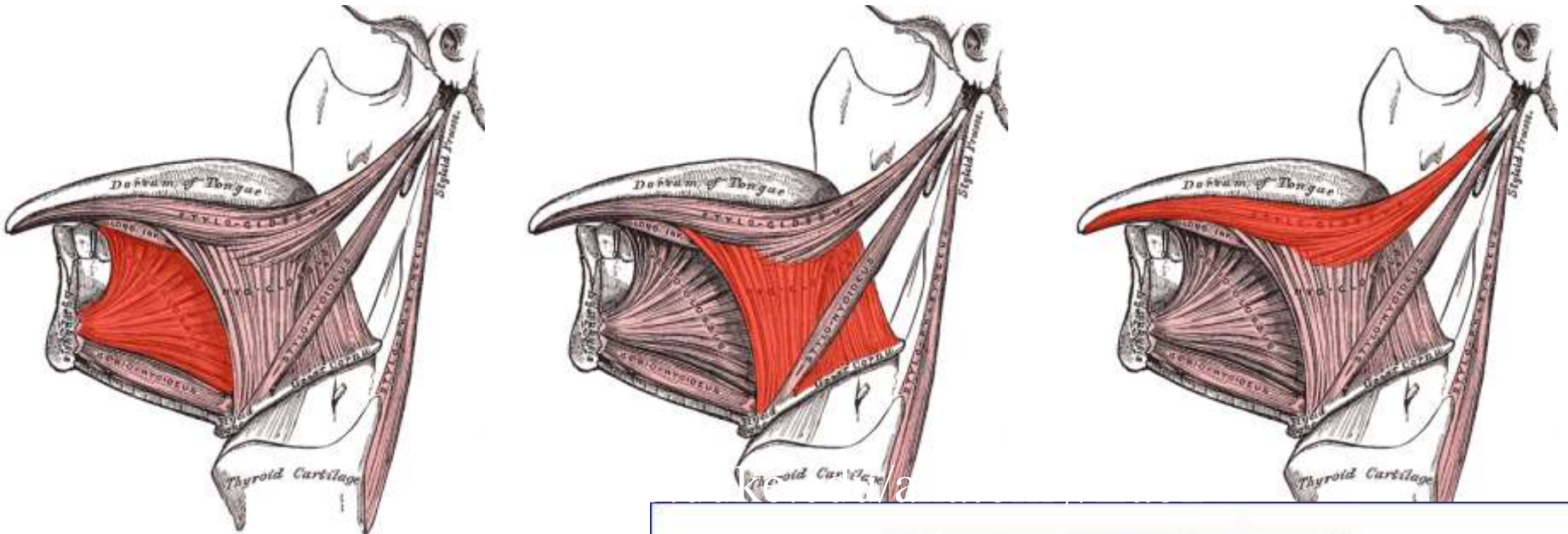




Extraglosální svaly

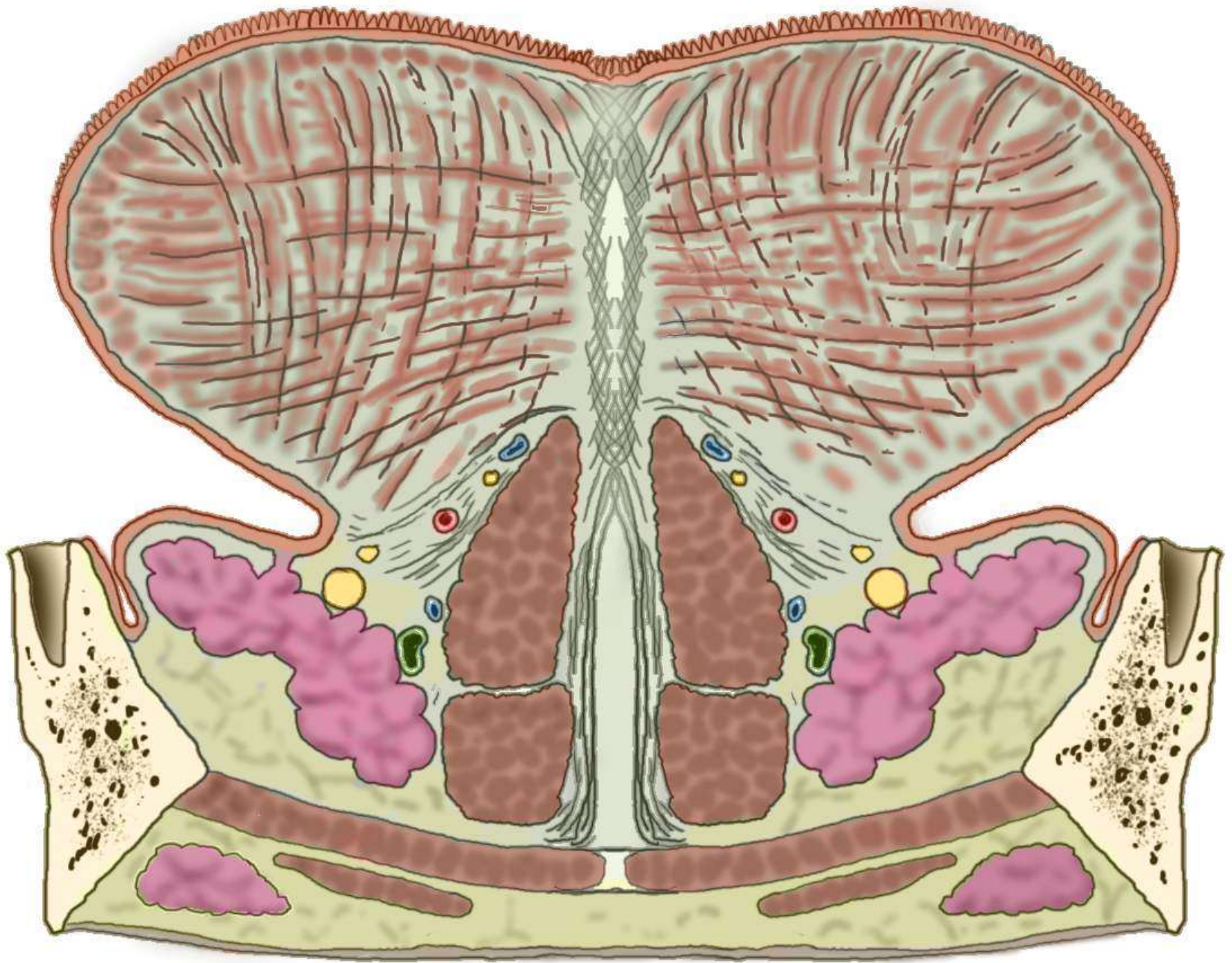


Extrinsic muscles

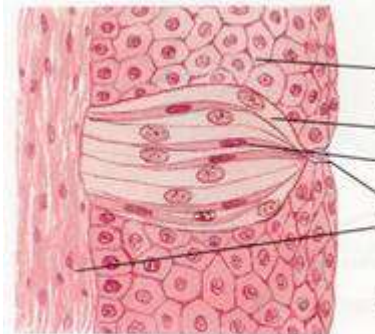
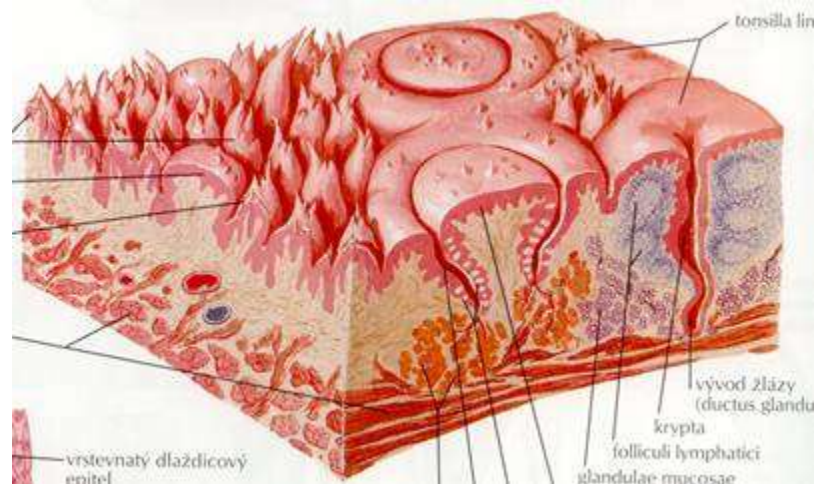
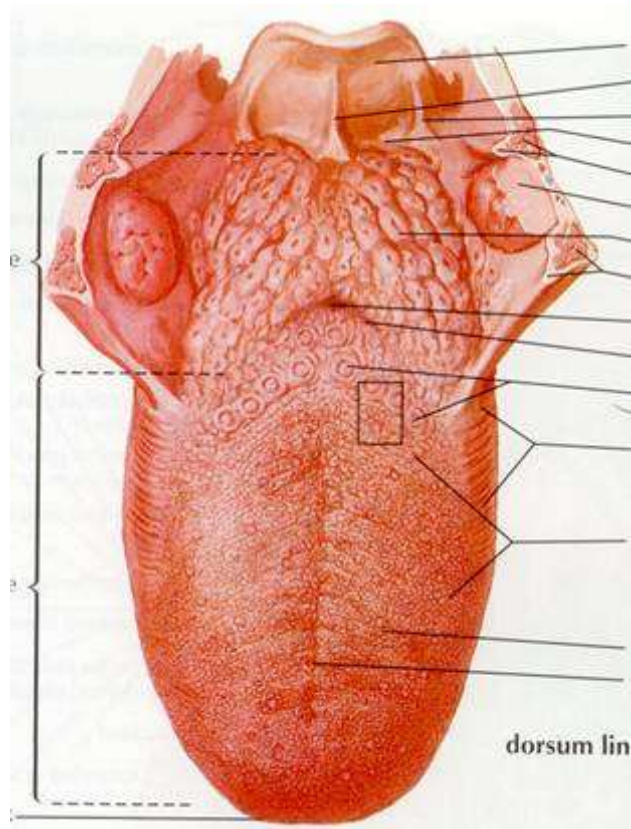


Wikiskripta Grays anatomy

<https://web.duke.edu/anatomy/Lab24-25/bisectedHead.html>

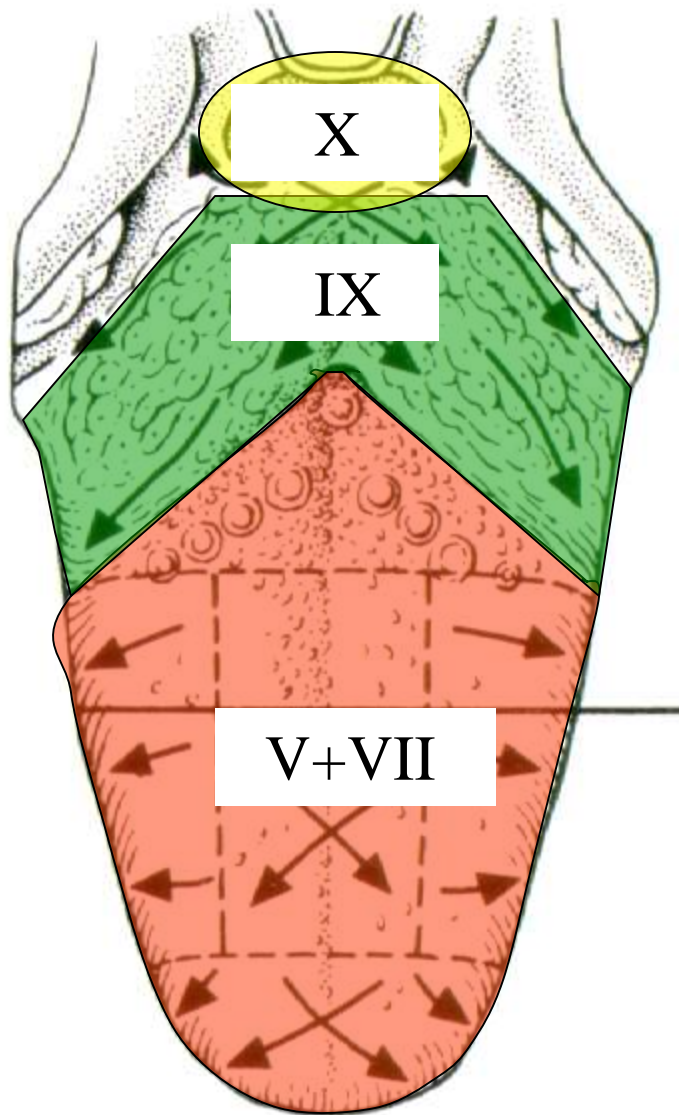


Lingua



Inervace

senzitivní V, IX, X



vegetativní:

parasympatická

ggl .submandibulare

sympatická

plexus lingualis

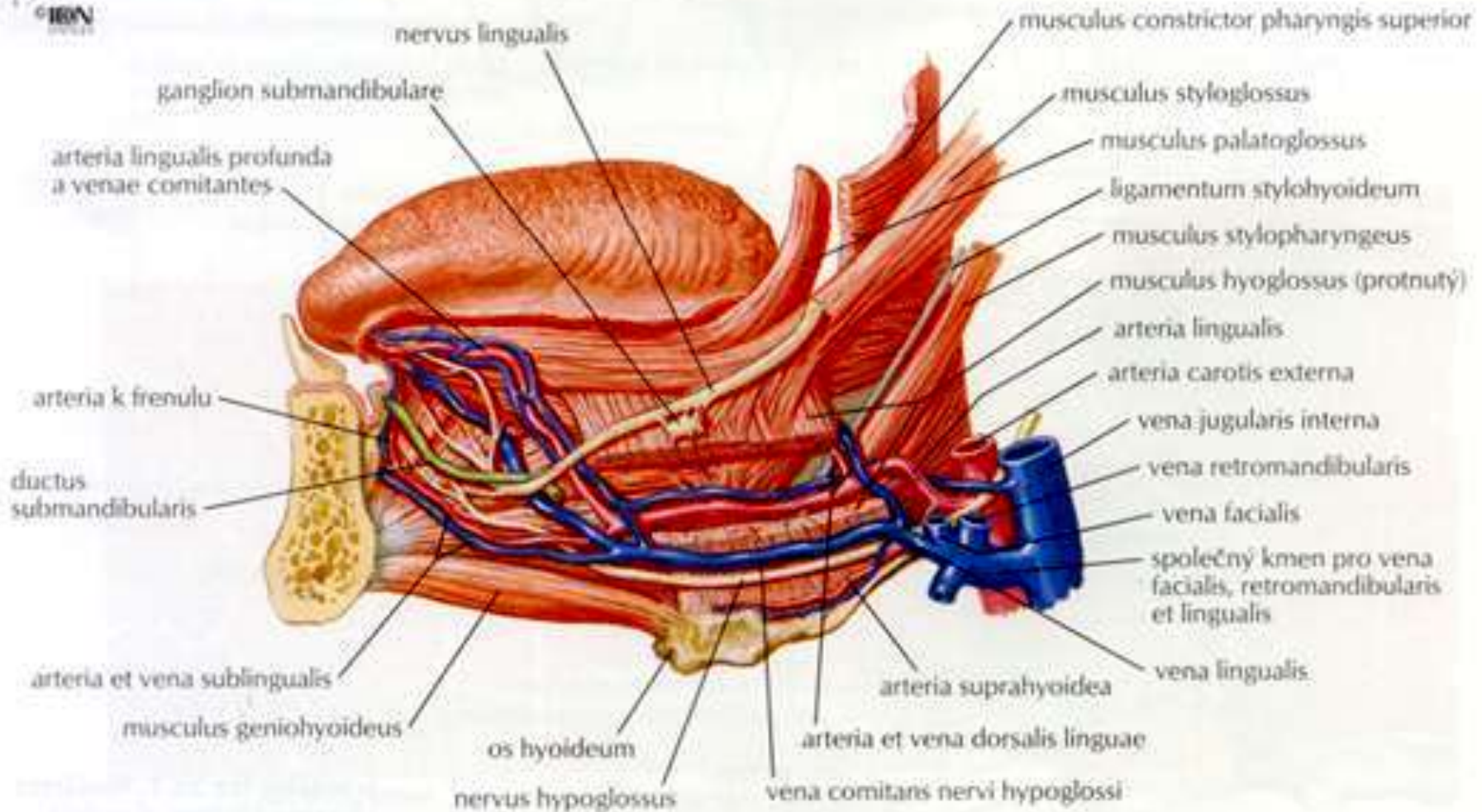
motorická:

n. XII

(m.palatoglossus IX/X)

senzorická VII, IX, X

Cévní zásobení



R. Čihák: Anatomie 2, Avicenum, Praha, 1988

F. H. Netter: Anatomický atlas člověka. Grada/Avicenum, Praha, 2003

Glandulae salivatoriae

Slinné žlázy

Salivary glands

Slinné žlázy

-drobné -ve sliznici dutiny ústní

(gll. labiales, buccales, linguales, palatinae)

-velké

Glandula parotis

vývod- ductus parotideus (Stenoni) - ústí do vestibulum oris

ve výši horního M₂ ; RTG kontrast = sialografie

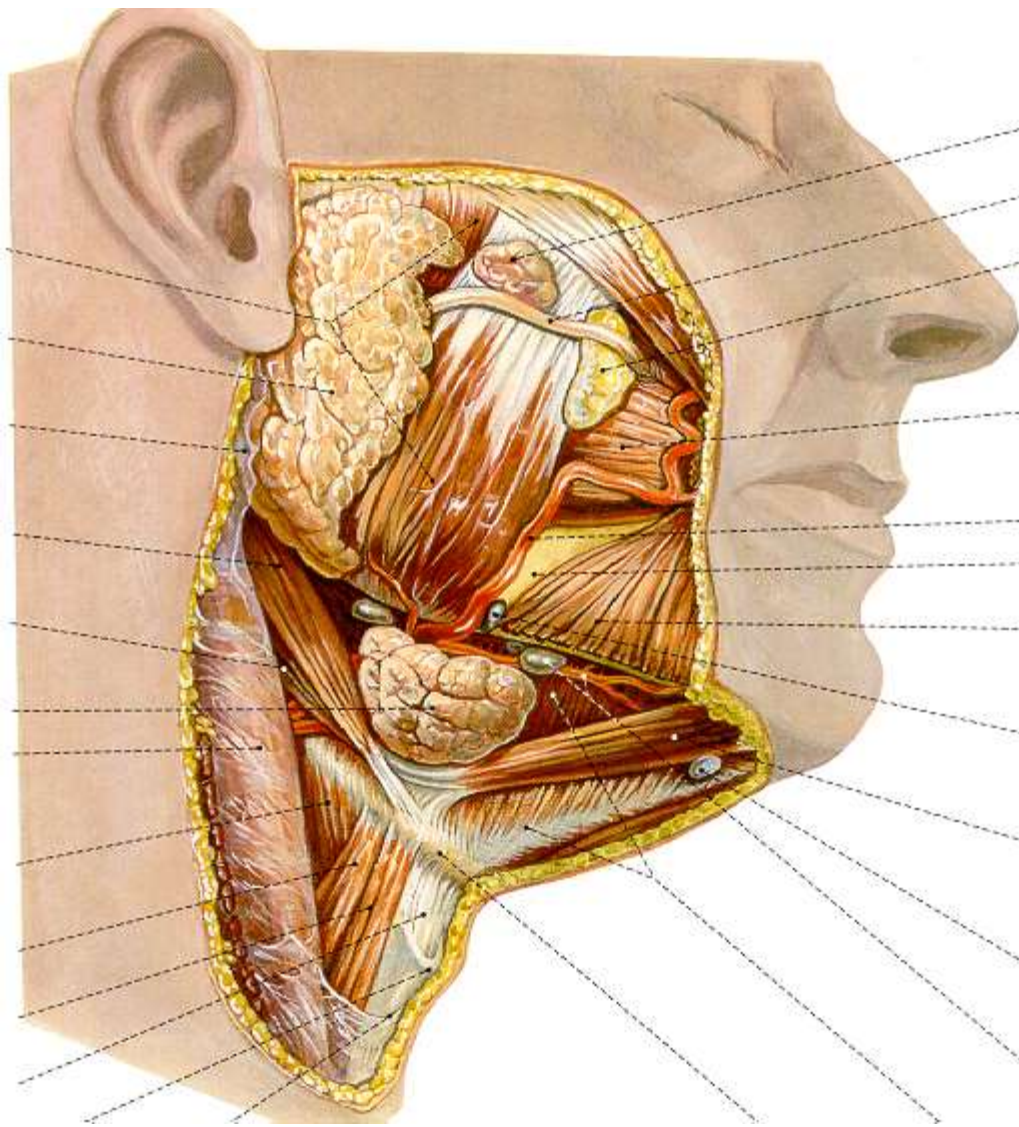
Cévy : a.temporalis sf., a.auricularis post., a. maxillaris

vv. parotidae → v. retromandibularis

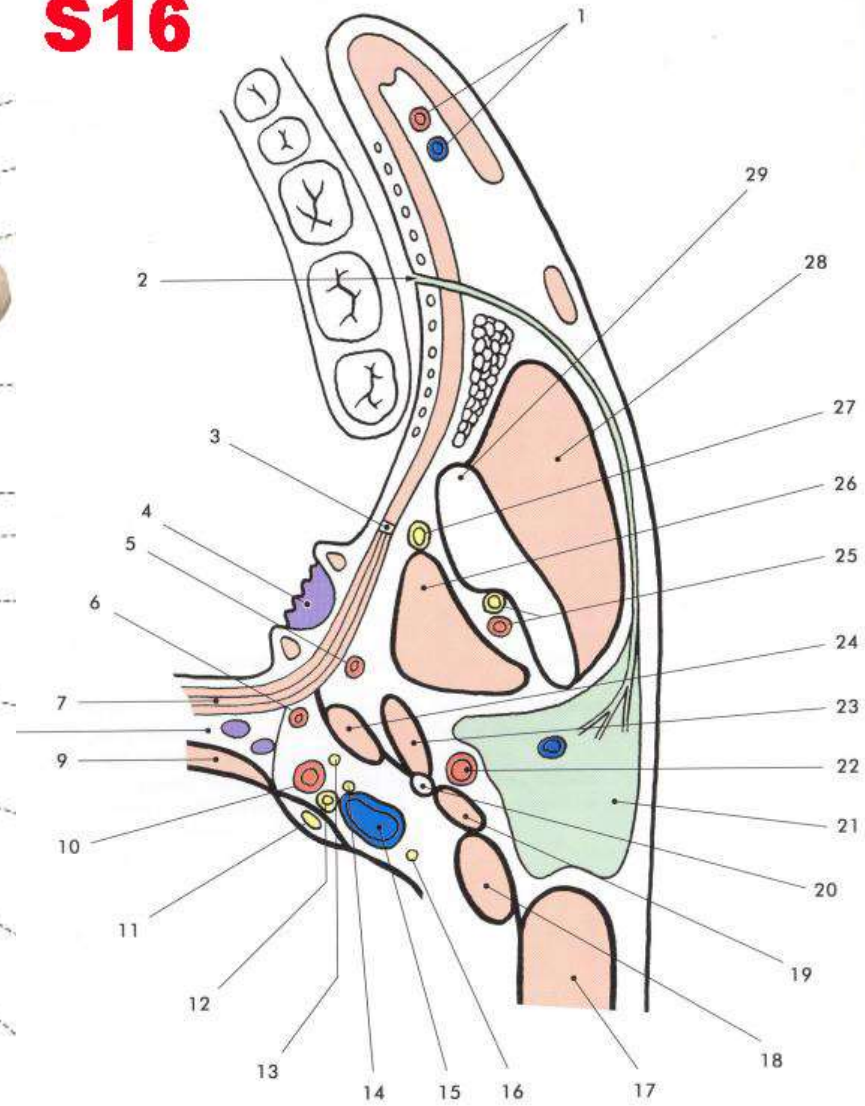
ln. parotidei → ln. cervicales sf. & prof.

Nervy - parasymp. inervace: n.IX (→ n. tympanicus →

n. petrosus minor → ggl. oticum)



S16



Glandula submandibularis

vývod - ductus submandibularis - obchází zadní okraj m.mylohyoideus

→ sublinguální prostor → ústí na **caruncula sublingualis**

Tractus angularis

Cévy : a.+ v. facialis, a.+ v. lingualis; ln. submandibulares

Glandula sublingualis

vývod - d. sublingualis major - společně s d. submandibularis →

dd. sublinguales minores - laterálně **plica sublingualis**

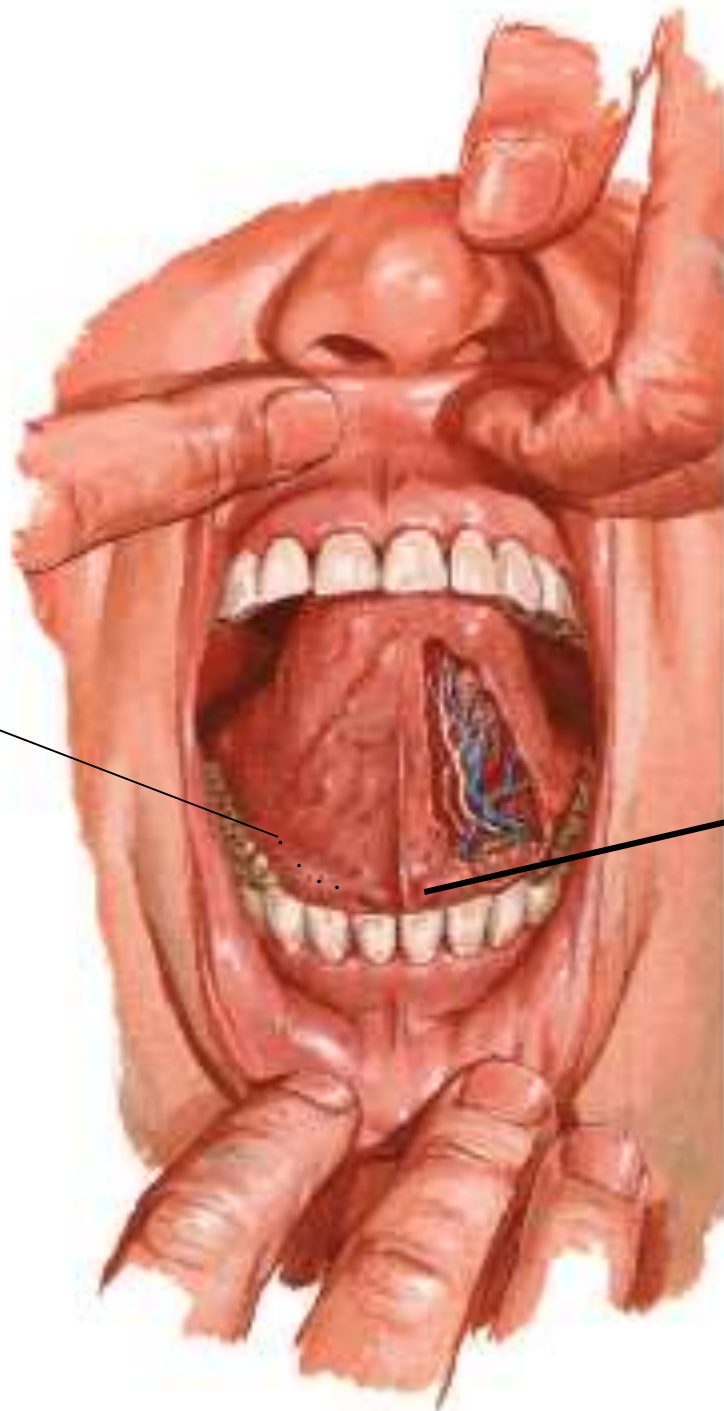
Cévy : a.+ v. sublingualis, a.+ v. submentalís

ln. cervicales profundi

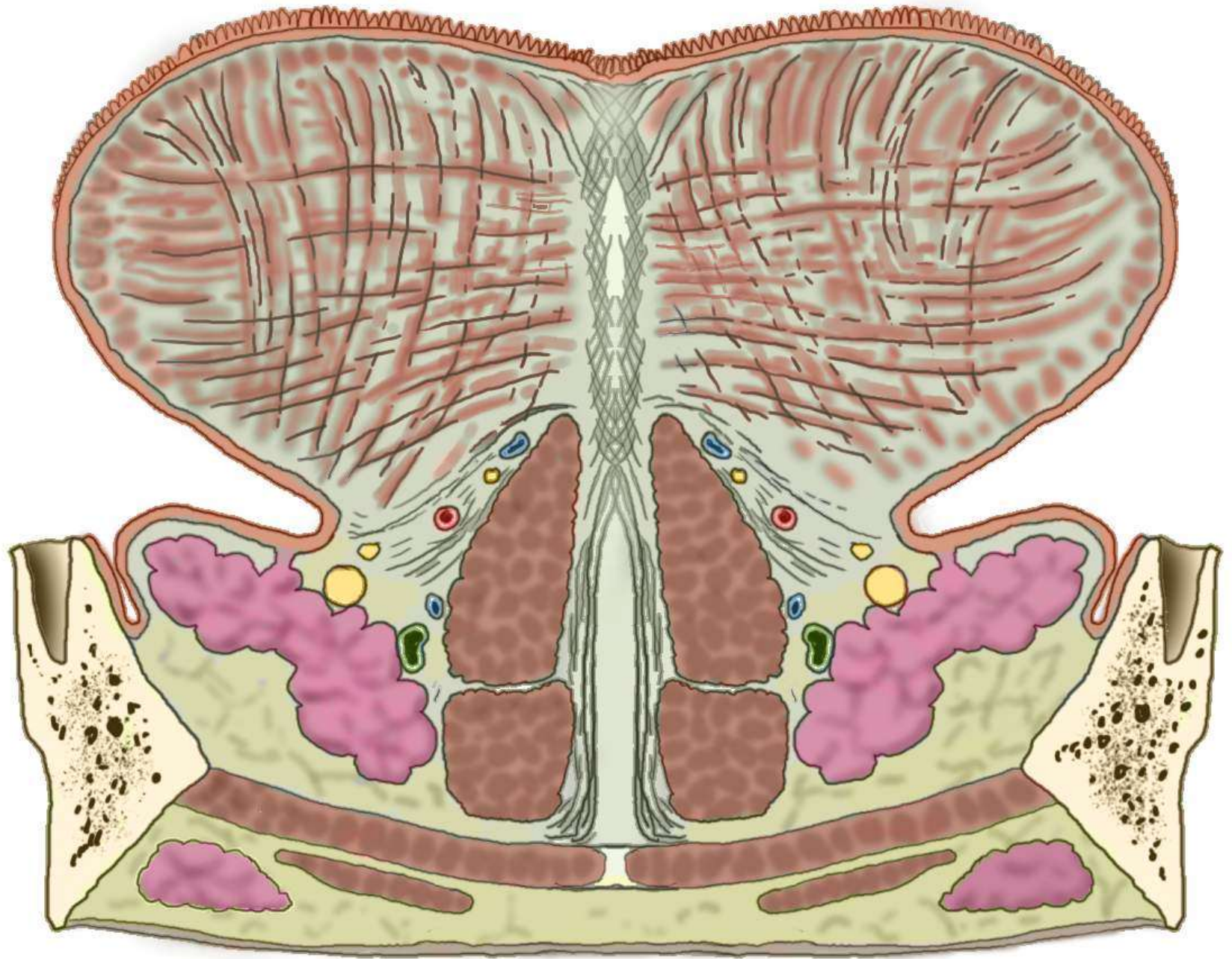
Inervace obou - parasymptická vlákna n.VII cestou n.lingualis →

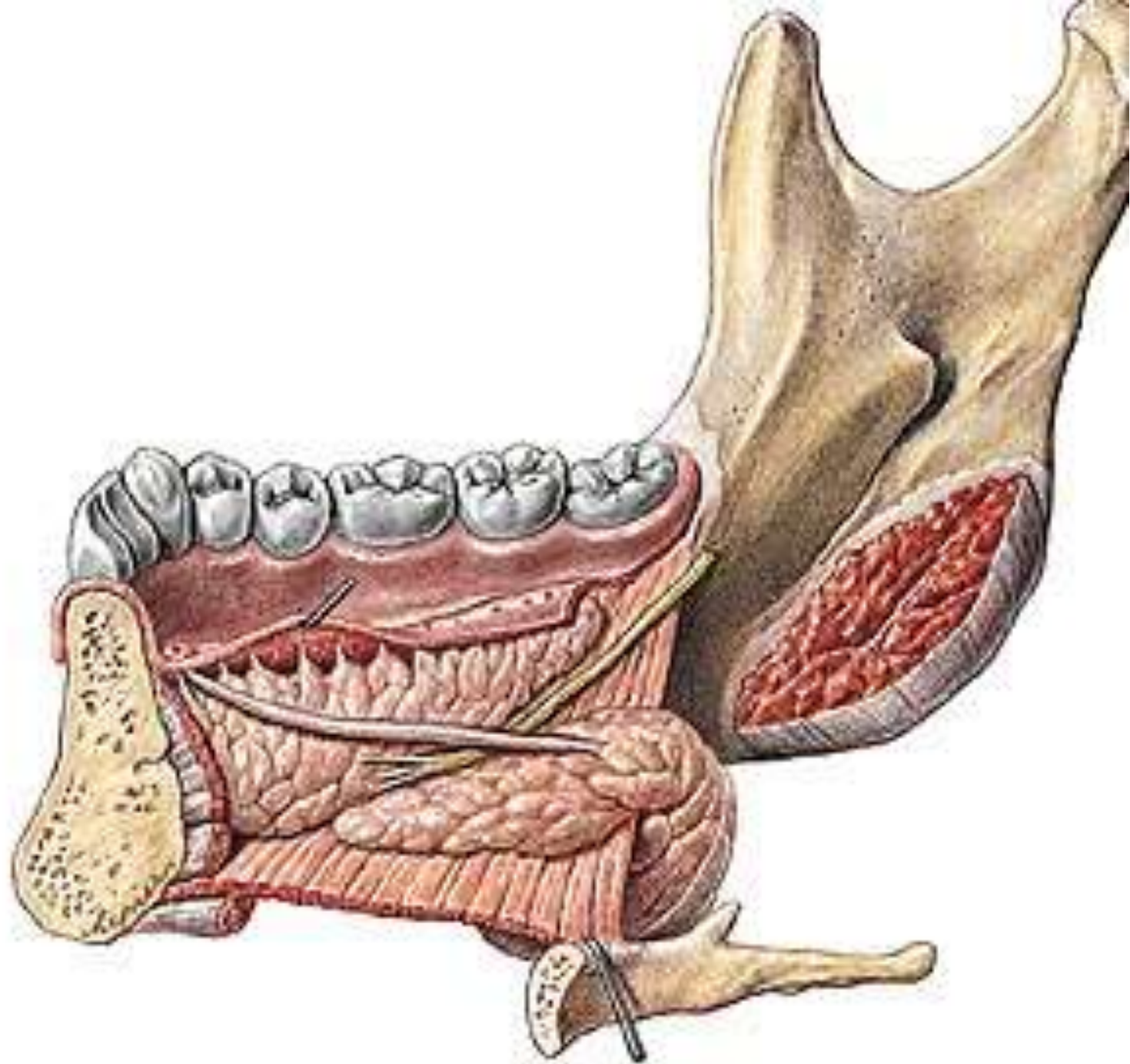
ggl. submandibulare

plica
sublingualis

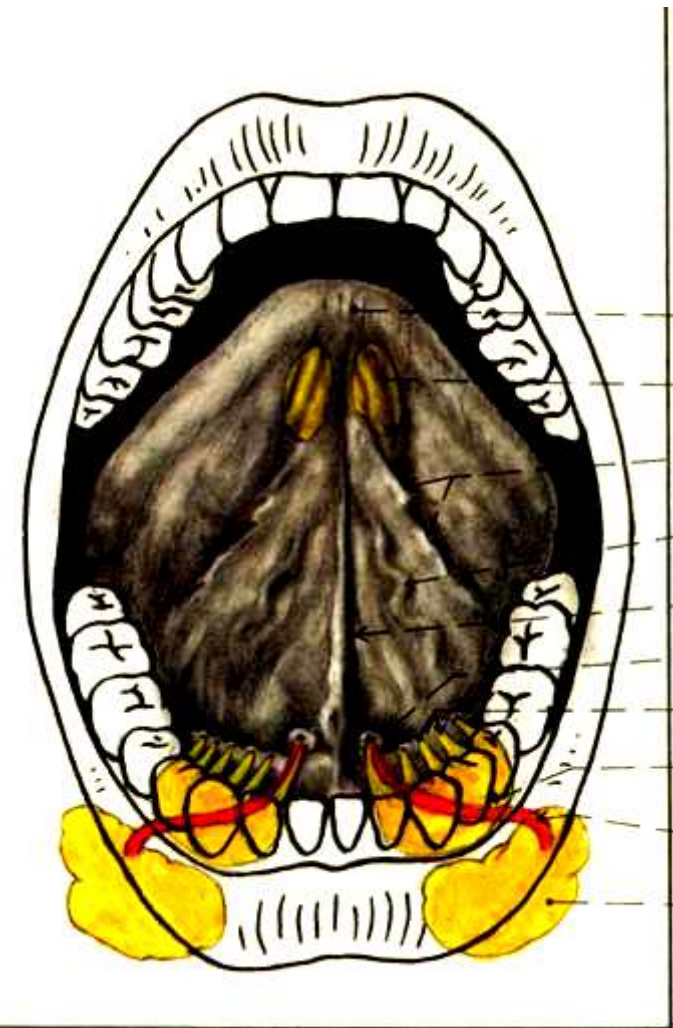
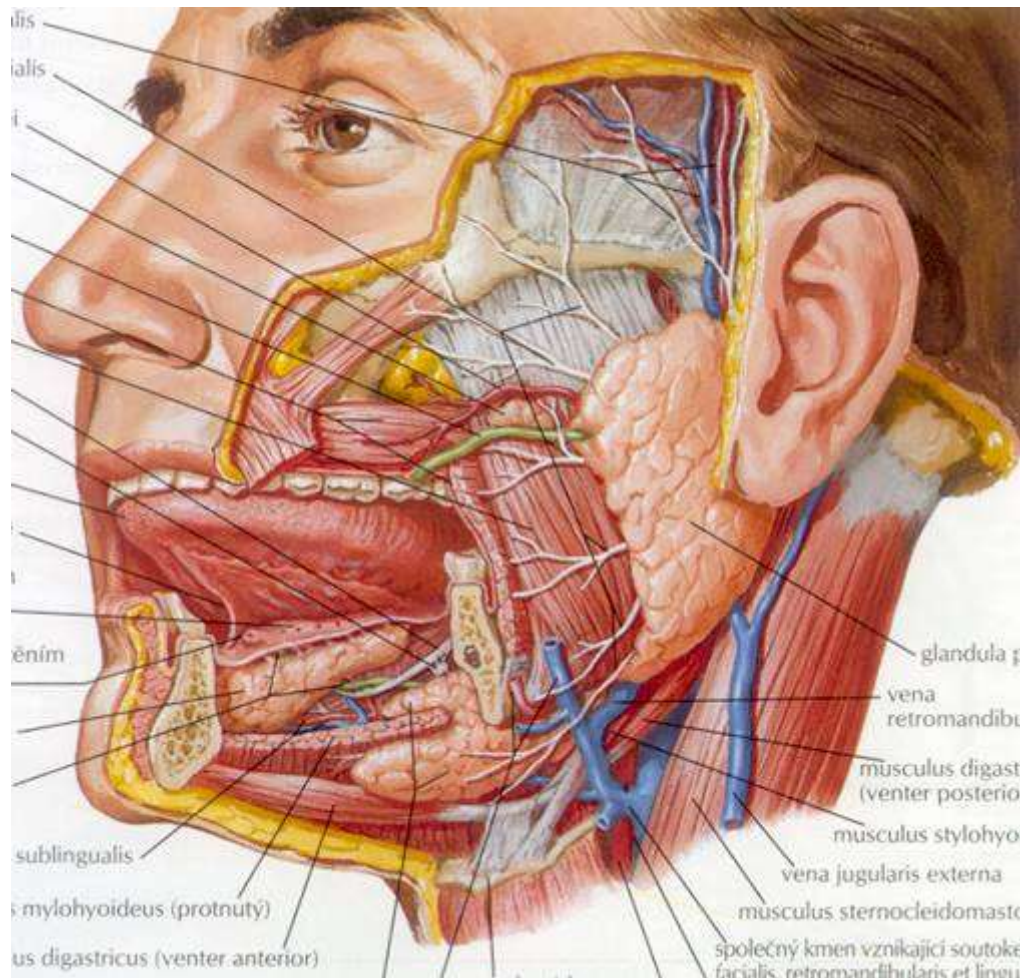


caruncula
sublingualis





Slinné žlázy



R. Čihák: Anatomie 2, Avicenum, Praha, 1988

F. H. Netter: Anatomický atlas člověka. Grada/Avicenum, Praha, 2003

Palatum

Patro

Palate

Palatum - patro

Palatum durum

Palatum molle = velum palati

skelet - aponeurosis palati → úpony svalů

Cévy a nervy

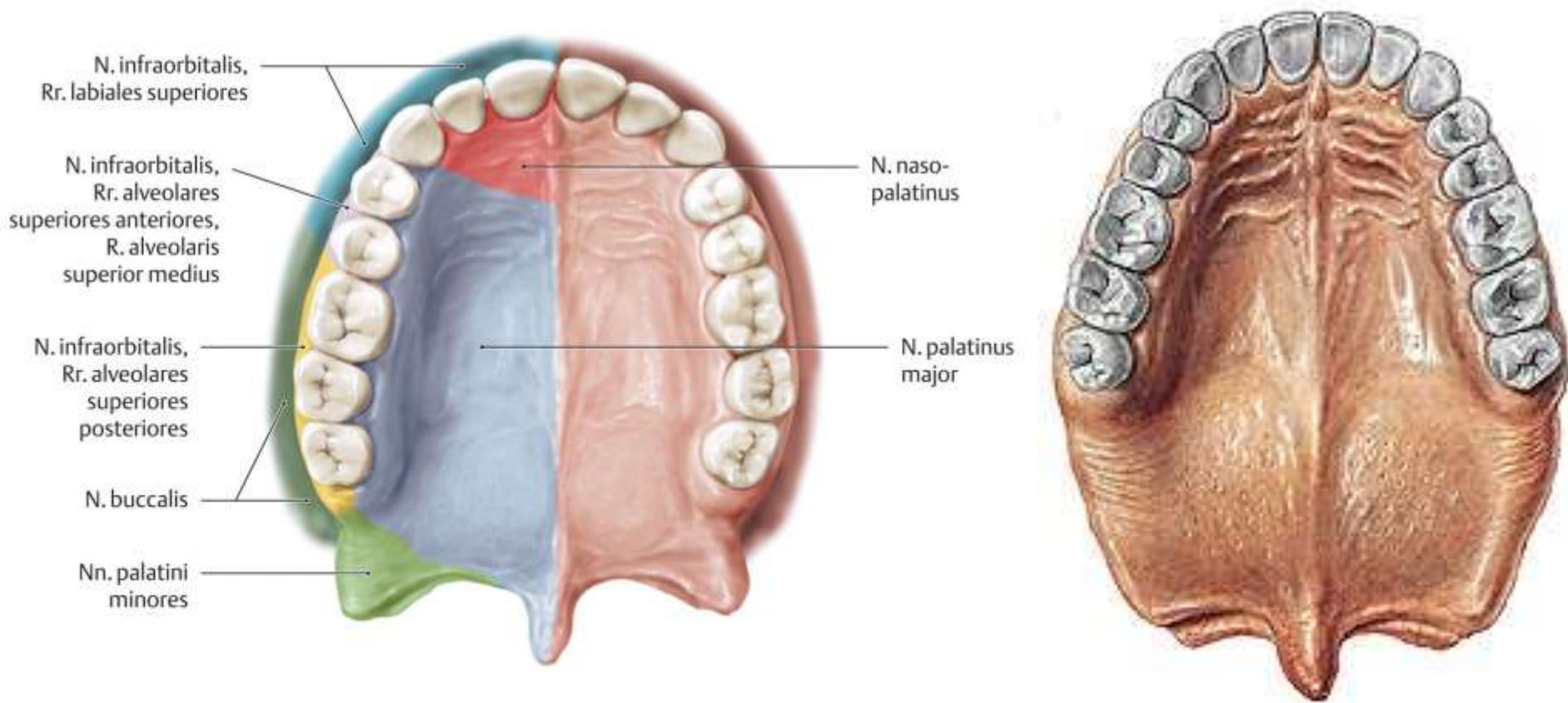
A. palatina desc. (a. maxillaris), a. palatina asc. (a. facialis)

Žilní plexus pterygoideus, plexus pharyngeus

Lymphonodi submandibulares, cervicales profundi

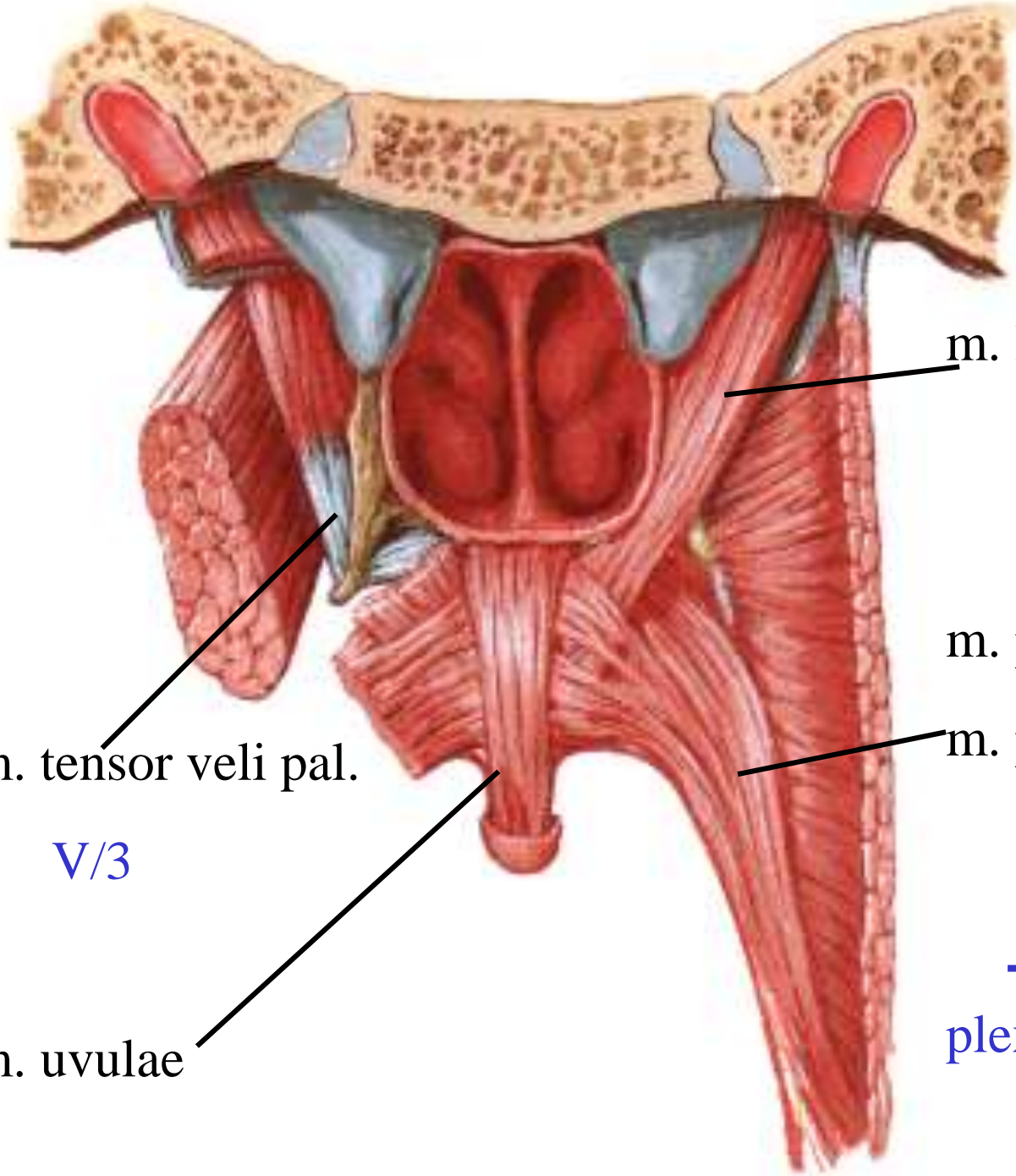
Inervace motorická: V/3 (tensor), VII (levator), IX - X

senzitivní: V/2 nn.palatini maj. & min., n. nasopalatinus



E Sensible Innervationsgebiete von Gaumenschleimhaut, Oberlippe, Wangen und Zahnfleisch

Ansicht von kaudal



m. levator veli palatini

VII + pl. pharyngeus

m. palatoglossus

m. palatopharyngeus

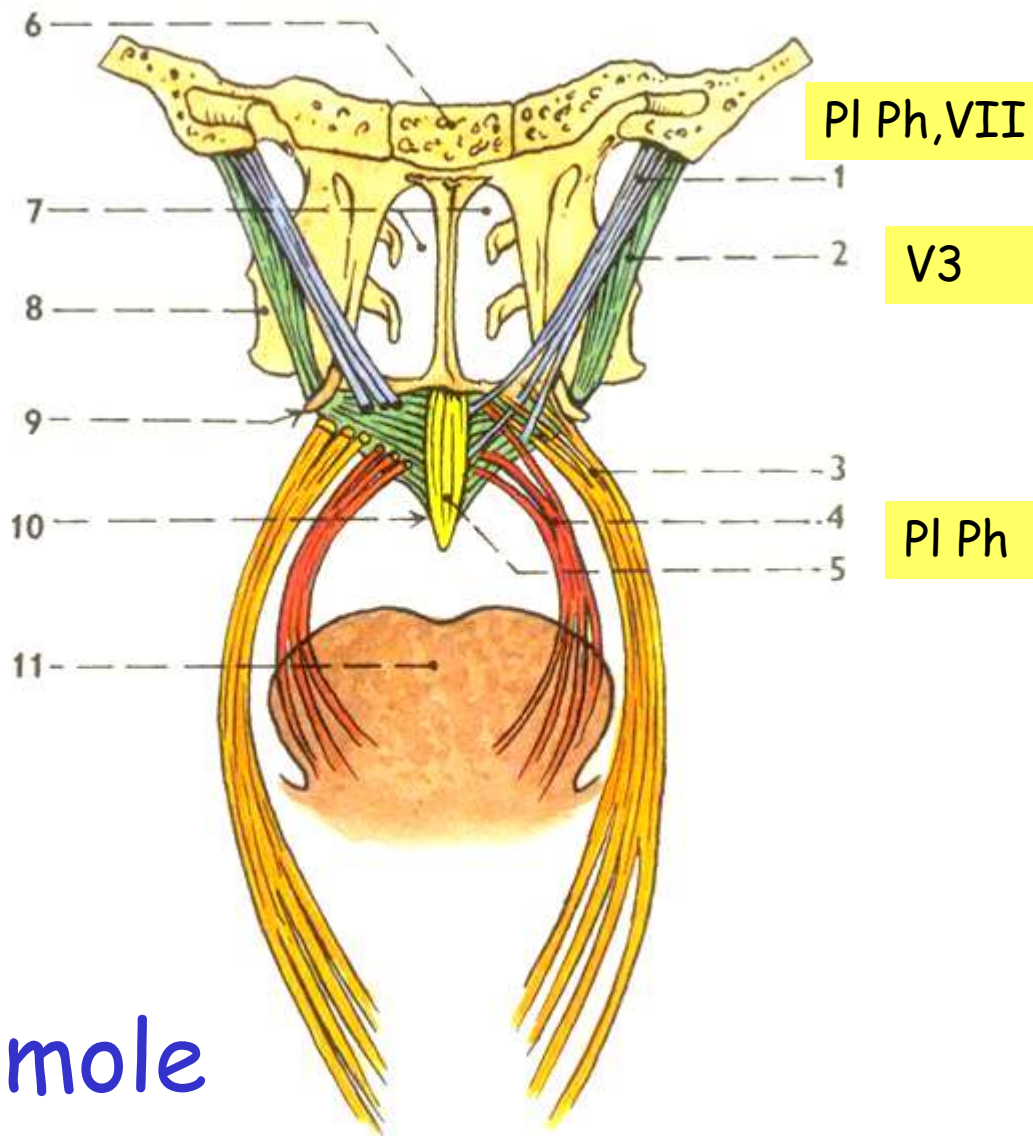
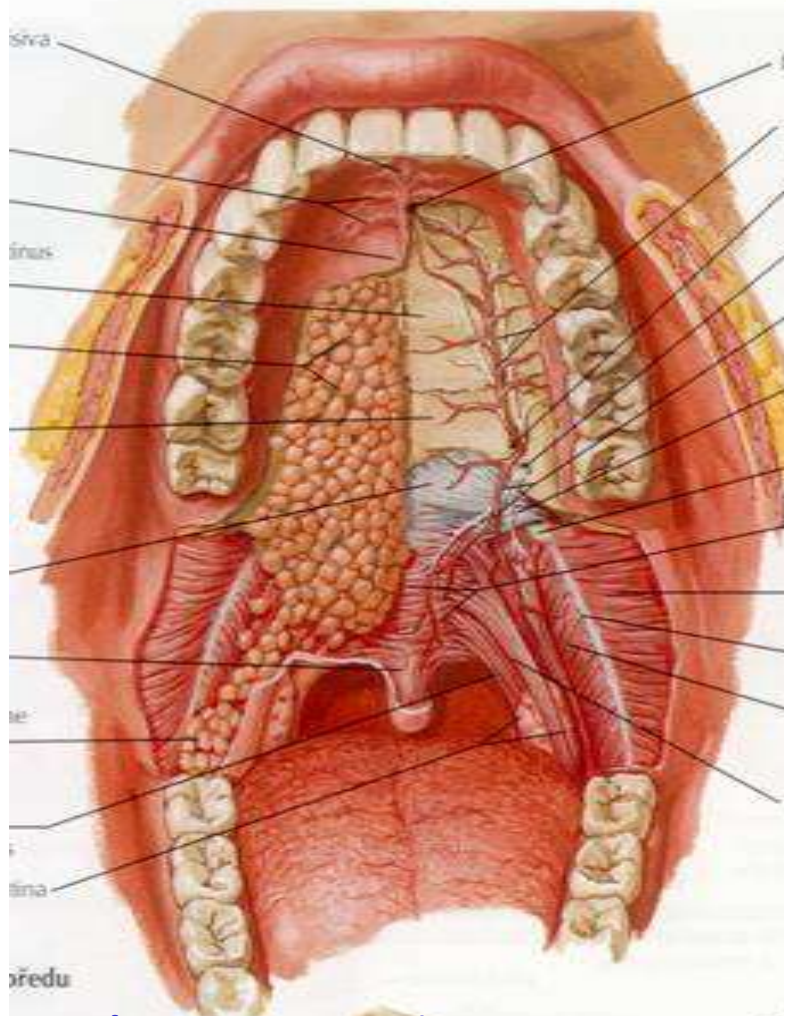
inervace:

plexus pharyngeus IX-X

m. tensor veli pal.

V/3

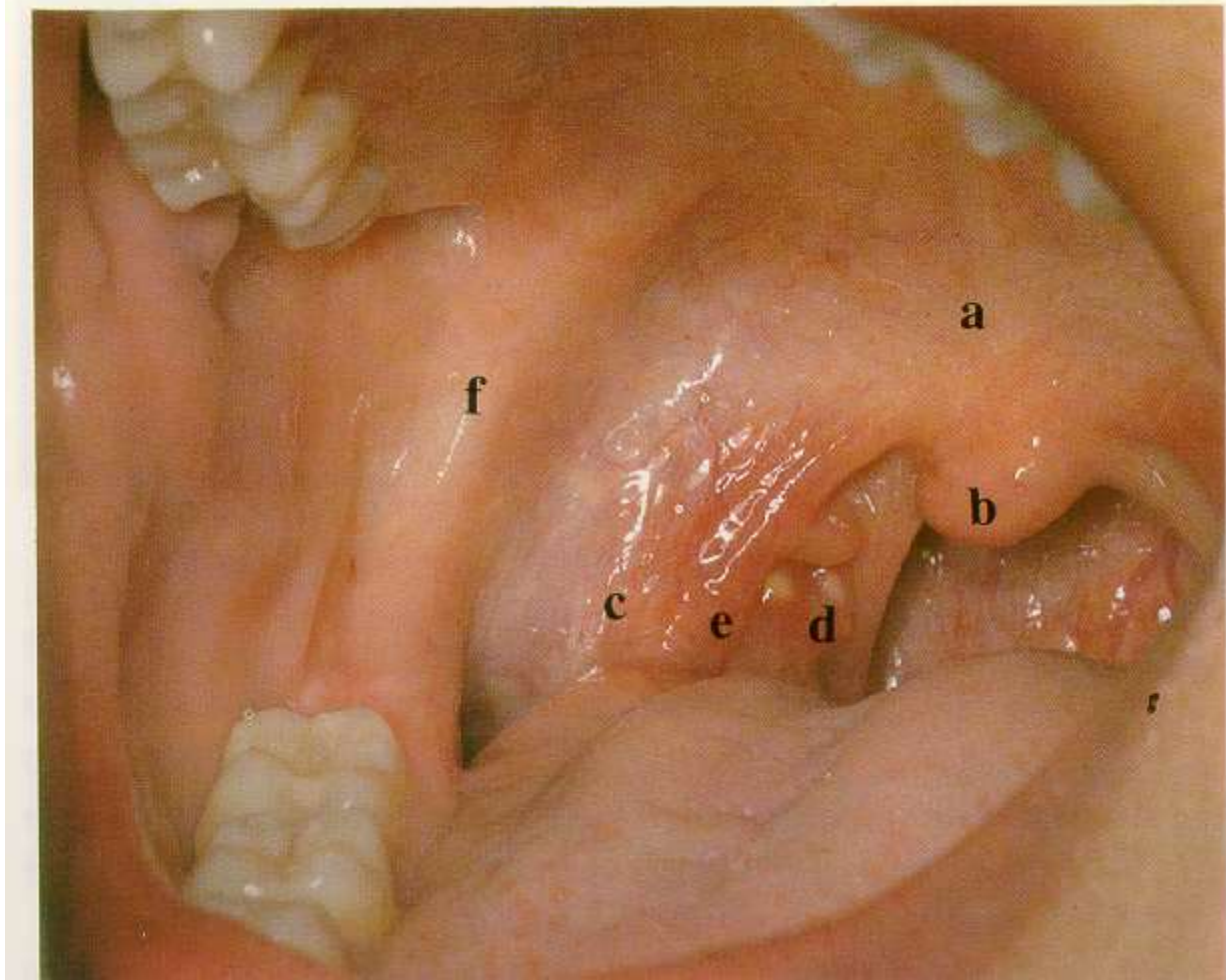
m. uvulae



Palatum durum et mole

R. Čihák: Anatomie 2, Avicenum, Praha, 1988

F. H. Netter: Anatomický atlas člověka. Grada/Avicenum, Praha, 2003



Isthmus faucium : uvula

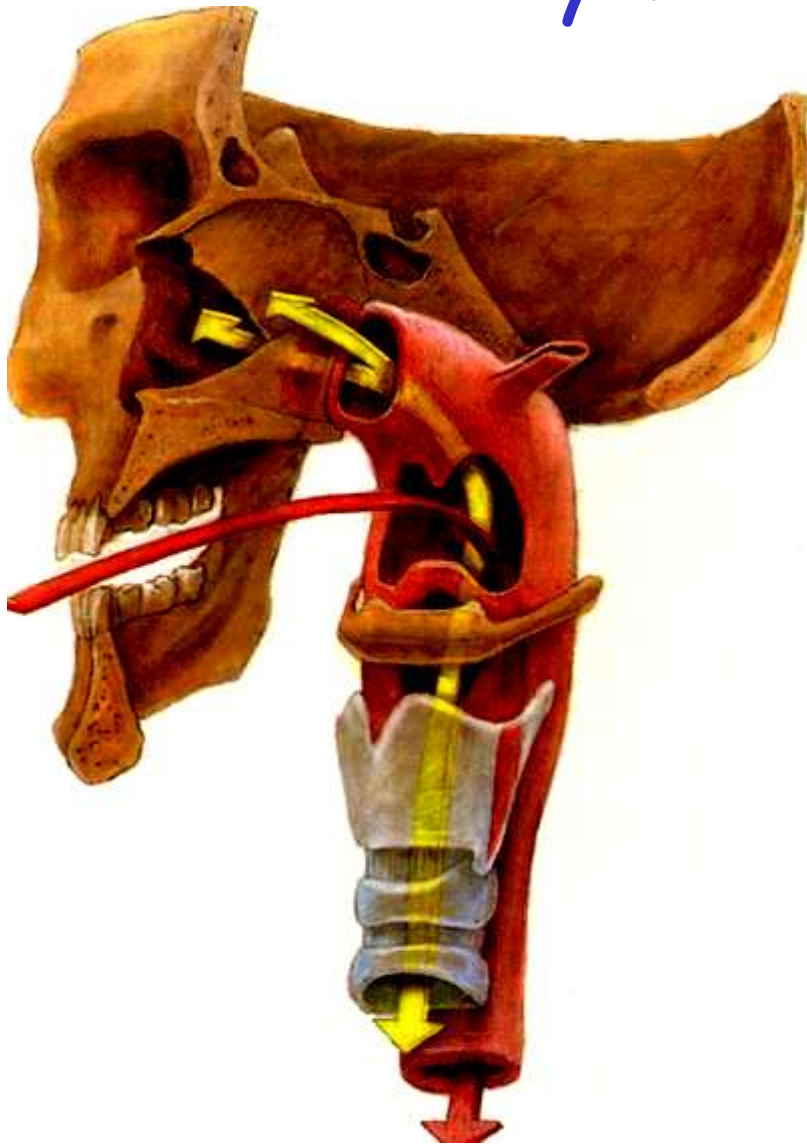
arcus palatoglossus, arcus palatopharyngeus

sinus tonsillaris - tonsilla palatina

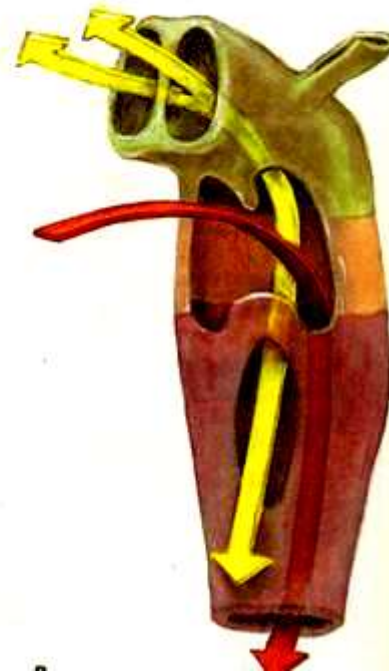
Pharynx

Hltan

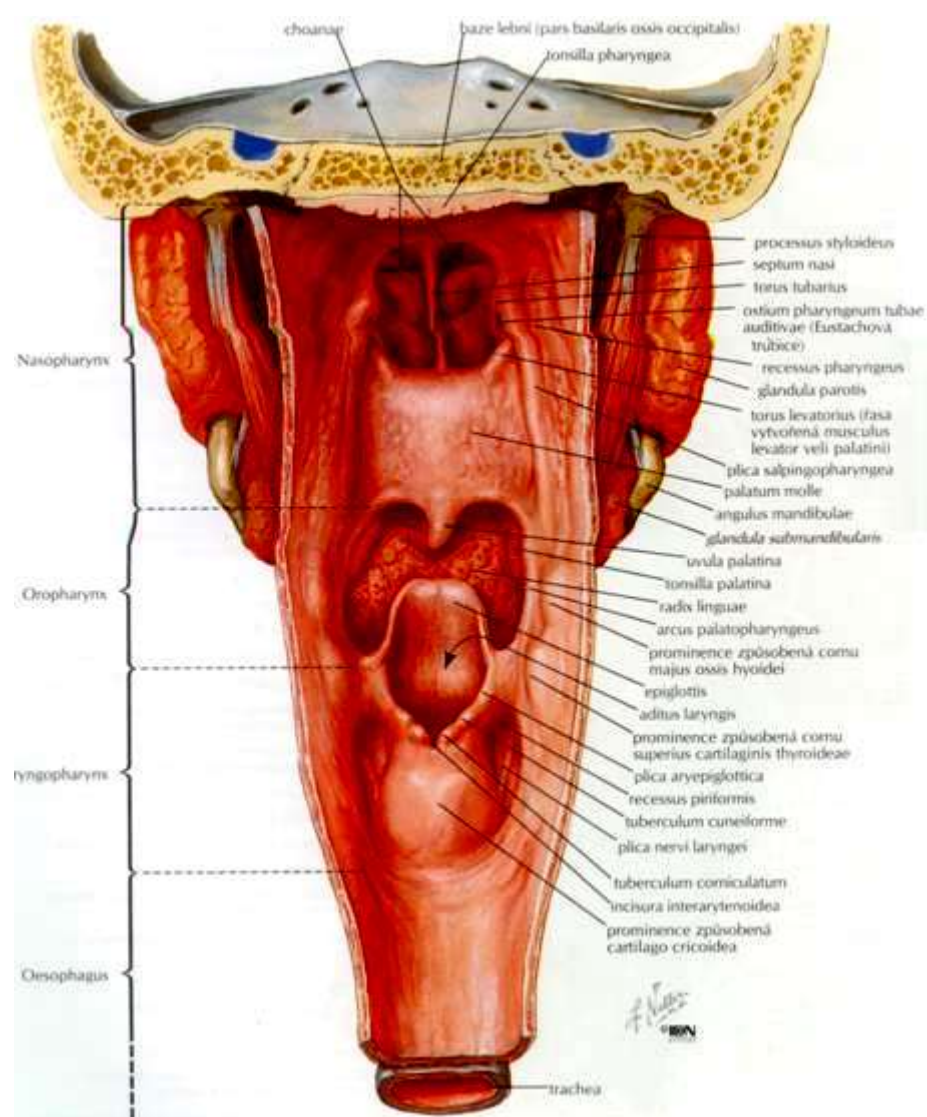
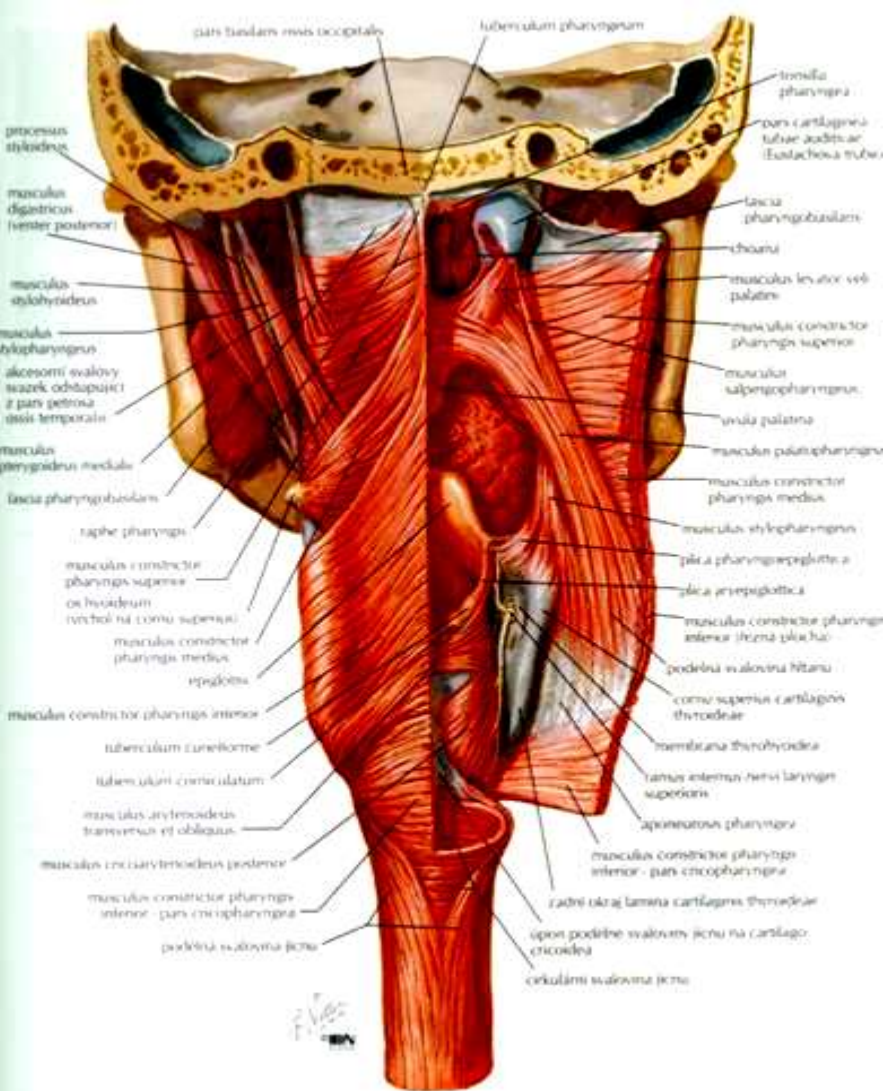
Pharynx



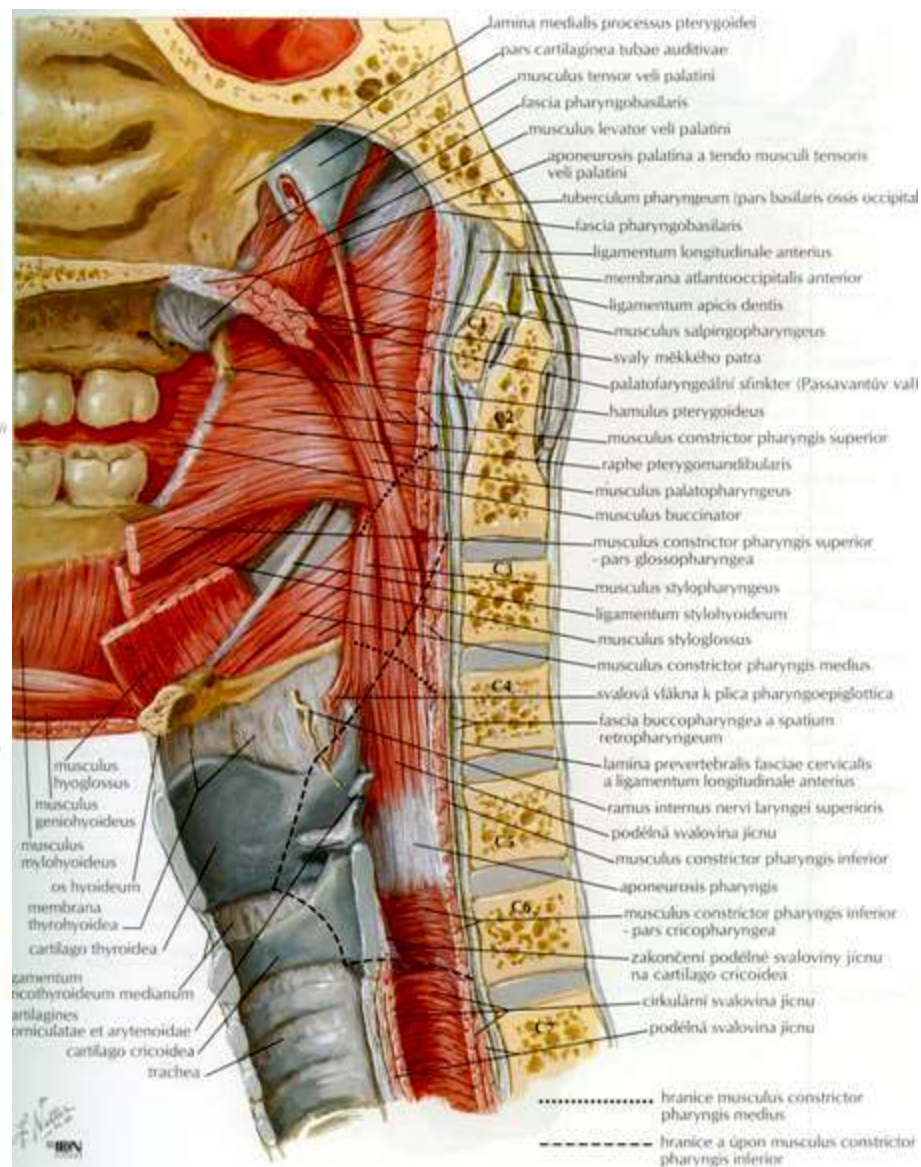
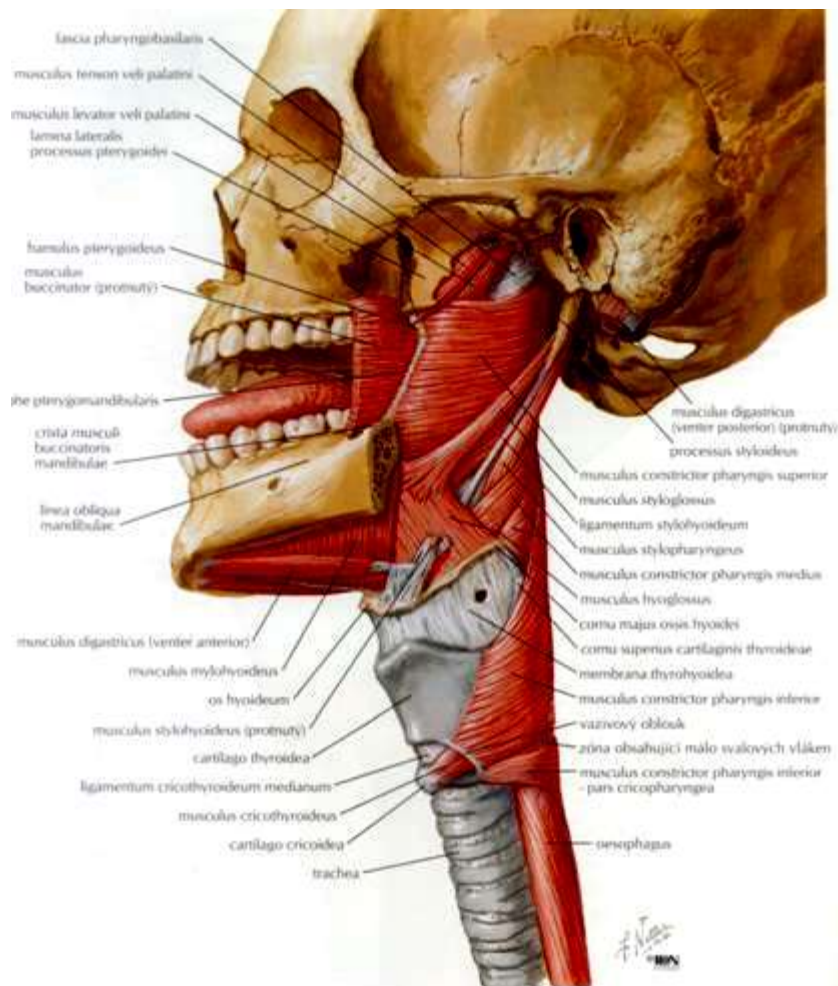
Pars nasalis
Pars oralis
Pars laryngea



Pharynx



Pharynx



Muscles of pharynx:

Constrictores:

Superior

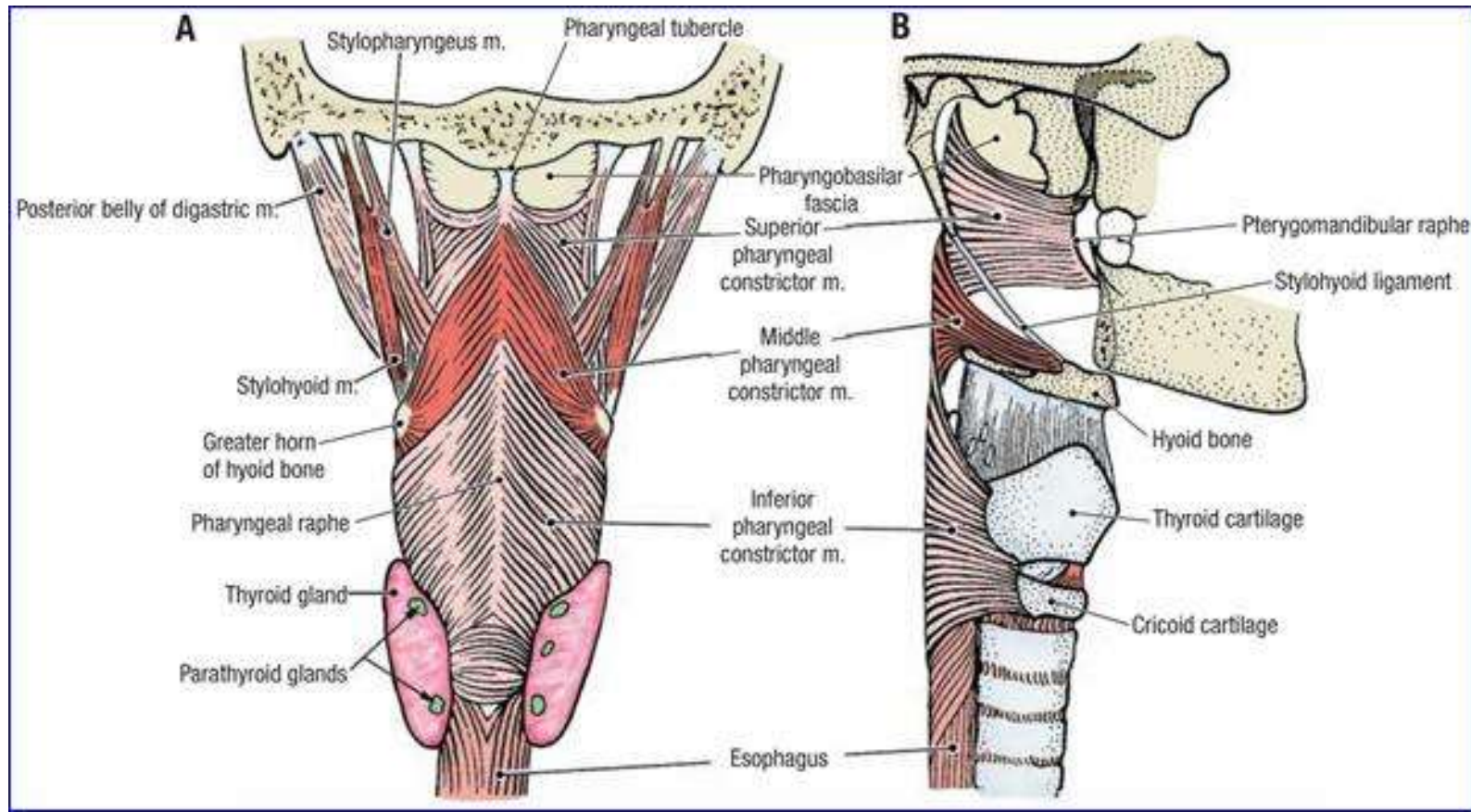
Medius

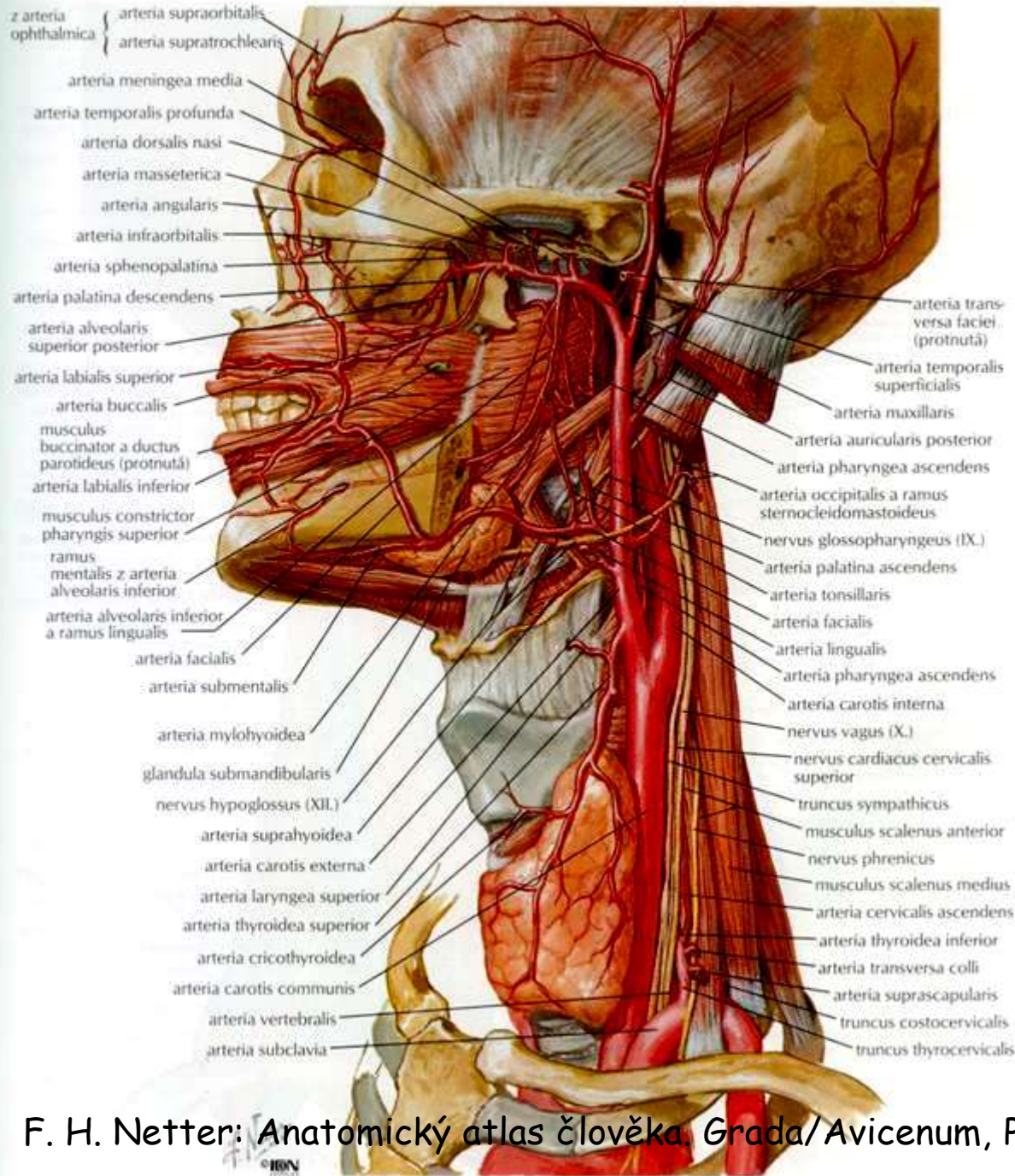
Inferior

Levatores:

Stylopharyngeus

Salpingopharyngeus

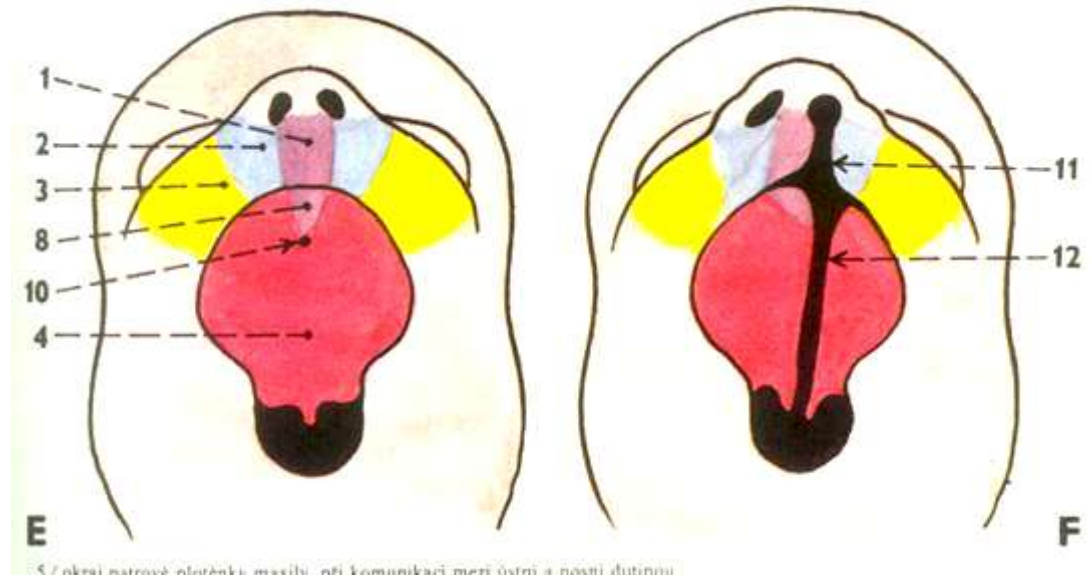
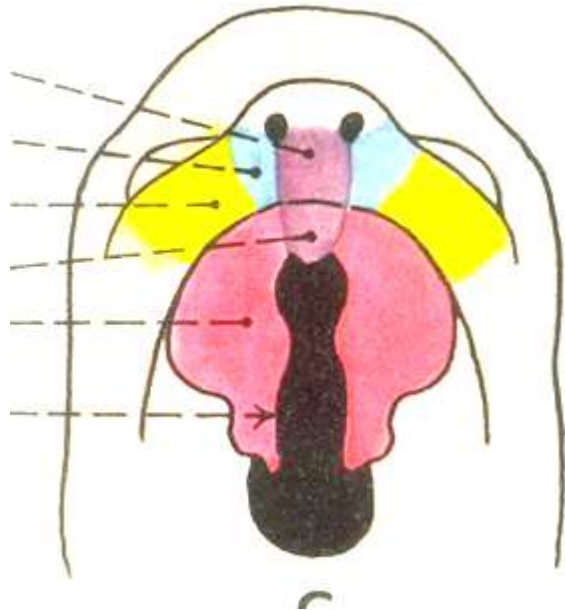




Pharynx- cévní zásobení

A pharyngea asc.
A palat. asc.
A palat. desc.

Vývoj obličeje- rozštěp



Použité materiály

Sobotta J: Atlas of Human Anatomy Vol 1 –2 Munich, Urban und Schwarzenberg, 1993

Williams P & Warwick R: Gray´s Anatomy, 37 ed, Churhill Livingstone, 1996

Netter, F: Atlas of Human Anatomy, 4th ed., Elsevier, USA, 2006

Tillman: Atlas der Anatomie, Springer, Heidelberg, 2005